Yellow
4 1/8 x 6 1/2
Mine
3 5/8 x 6 3/4

CYMBIDIELLA RHODOCHILA.

Specimen plant (see page 239).

QH
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1918
V.26

THE

ORCHID REVIEW

An Illustrated Monthly Journal

OF ORCHIDOLOGY

EDITED BY R. ALLEN ROLFE, A.L.S.

VOLUME XXVI

1918

Kew:

FRANK LESLIE & CO., 12 LAWN CRESCENT.

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TO

RICHARD ASHWORTH, ESQ., J.P.,

ASHLANDS, NEWCHURCH,

AN OLD AND ENTHUSIASTIC ORCHIDIST, AND

PRESIDENT OF THE MANCHESTER AND NORTH OF ENGLAND

ORCHID SOCIETY,

THIS TWENTY-SIXTH VOLUME OF THE "ORCHID REVIEW"

IS CORDIALLY DEDICATED.

Kew,

December, 1918.

VOL. XXVI. JANUARY, 1918. No. 301.

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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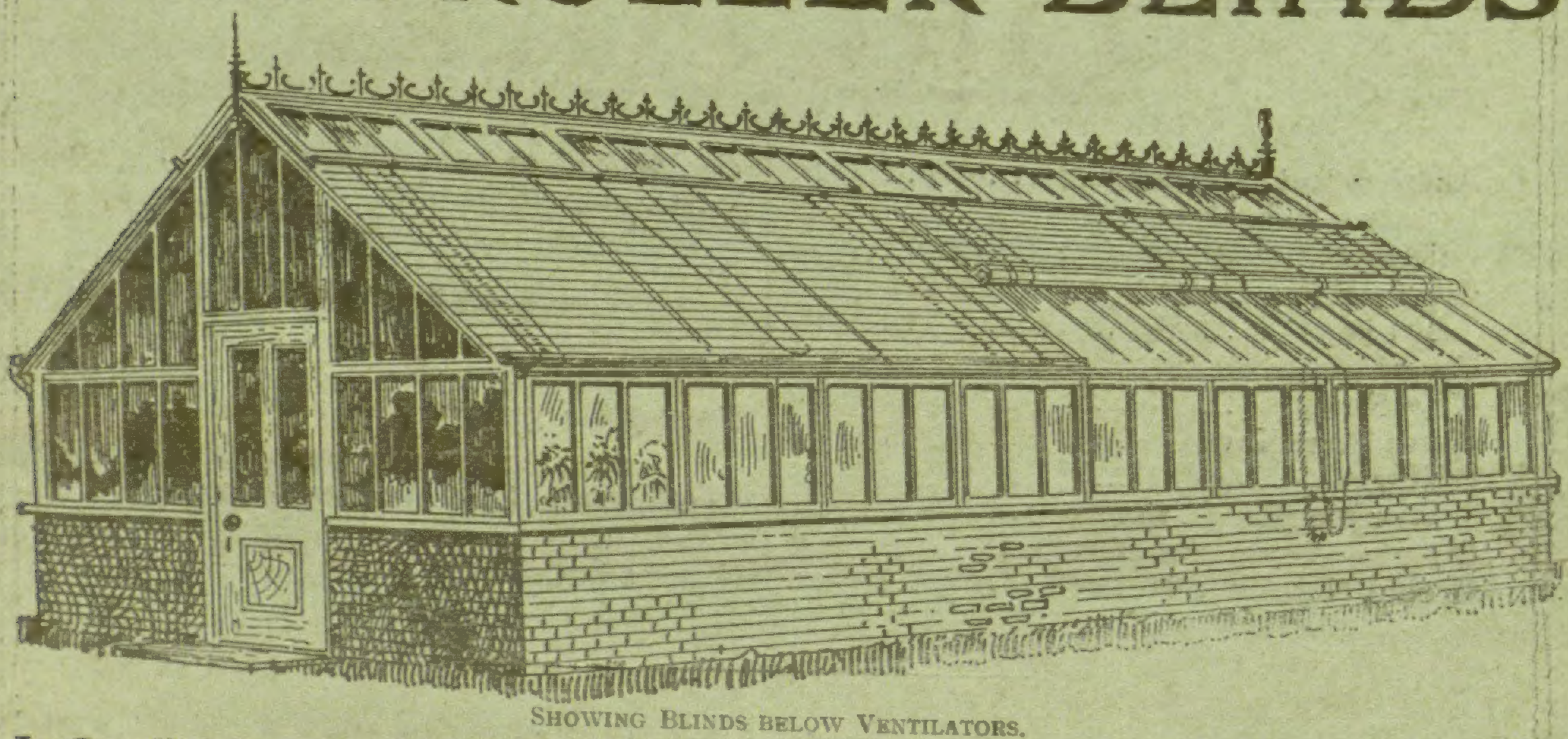

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The Orchid Review

VOL. XXVI. JANUARY, 1918. No. 301.

TWENTY-FIVE YEARS OF ORCHIDOLOGY.

THE completion of the twenty-fifth volume of the *Orchid Review* affords a convenient opportunity for a brief retrospect of the period during which it has been in existence. The work was established in January, 1893, when the Reichenbachian Herbarium had been sealed up for three and a-half years, and the period is further indicated by the fact that Cypripedium Chamberlainianum and Cattleya Victoria-Regina were the two striking novelties of the preceding year, both having received First-class Certificates from the R.H.S. It may be interesting to reproduce the "contents" of the first issue, which are given as follows (the pages are not material, and have been omitted) :—

Our Programme.
Cattleya × Krameriana.
The History of Orchid Hybridisation, Part I.
Oncidium Saintlegerianum.
Cypripedium × Niobe (Fig. 1).
Lælia virens.
Cattleya labiata alba.
Orchids of 1892.
Cattleya Alexandræ.
Cattleya Victoria-Regina.
The Burford Collection.
Denbrobium Amblyornidis and the Gardener-Bird.
The Hybridist—
Læliocattleya × Brymeriana.
Masdevallia × McVittiæ.
Cymbidium × Winnianum.
Cypripedium × Edwardii (Fig. 2).
Calendar of Operations for January.
Orchid Portraits.
Orchids at the Royal Horticultural Society.

An interesting glimpse of the then existing conditions is seen in the summary of the Orchids of 1892, and in a report of the R.H.S. meeting for December, 13th, 1902. From the latter we learn that the meeting was held at the Drill Hall, Westminster (the present temporary venue), and that a casual visitor would hardly have imagined that it was the dullest season of the year, so brilliant was the display. We also find the record that three medals were awarded for culture; a Silver Banksian to a brilliant specimen of Sophronitis grandiflora bearing over forty flowers, exhibited by the President, Sir Trevor Lawrence, Bart., the plant being grown in a pan about fourteen inches across; a similar award to a huge specimen of Cypripedium insigne, exhibited by C. E. Smith, Esq., Cobham, Surrey, bearing ninety-six blooms of first-rate size and colouring, the plant having taken ten years to grow into its present fine condition; and a Bronze Banksian to two good specimens of C. insigne, exhibited by S. G. Lutwyche, Esq., and bearing an aggregate of 139 blooms. There were

giants in those days, for we find that Mr. Lutwyche also exhibited two large plants of *Zygopetalum* "Mackayi" (possibly *Z.* intermedium) bearing an aggregate of 116 large flowers, and the Duke of Northumberland, Syon House, staged twenty-four large plants of Cypripedium insigne in a bank about thirty feet long, with large plants of Calanthe Veitchii behind. One can quite realise the effect of such an exhibit.

At this meeting three First-class Certifícates were awarded, the subjects being Cattleya labiata alba, exhibited by M. Wells, Esq.; Cypripedium Johnsonianum (nitens × Lawrenceanum), by Messrs. F. Sander & Co.; and Sophrocattleya Calypso (S. grandiflora × C. Loddigesii) by Messrs. James Veitch & Sons. Awards of Merit were given to Cattleya amethystoglossa Selwood var., from G. D. Owen, Esq., Rotherham; Cypripedium Arete (concolor × Spicerianum), from Messrs. James Veitch & Sons; Lælia Finckeniana (a natural hybrid from L. albida and a white L. anceps) from C. W. Fincken, Esq., Barnsley, and Masdevallia McVittiæ (tovarensis × Veitchiana), from W. Thompson, Esq., Stone. Botanical Certificates were also given to Dendrobium Treacherianum, from W. P. Brymer, Esq., Dorchester, and Pleurothallis punctulata, from R. I. Measures, Esq., Camberwell. It is further interesting to note that there were fifteen amateur exhibitors and six nurserymen.

The Calendar of Operations was in the capable hands of Mr. W. H. White, then Orchid grower to Sir Trevor Lawrence, Bart., whose collection is the subject of a long article from another pen. A review of "Orchid Portraits" shows that there were then three illustrated works devoted solely to Orchids, the *Orchid Album*, *Lindenia*, and *Reichenbachia*. All are to-day extinct. The history of the Dendrobium is remarkable, and those who possess the first number will be interested at its re-perusal.

Among imported plants, the outstanding events of 1893 were the appearance of Eulophiella Elisabethæ and Cypripedium Charlesworthii. The former was introduced by Messrs. Linden, and exhibited at the Ghent Quinquennial Exhibition, of which it was recorded as perhaps the most remarkable exhibit, and the latter by Messrs. Charlesworth, Shuttleworth & Co., this receiving a First-class Certificate from the R.H.S. on September 26th, its appearance creating quite a sensation on account of the unique colour of the dorsal sepal and the ivory-white staminode. A good many other interesting novelties were described, as may be seen from a summary of the Orchids of 1893 (*O.R.*, 1894, pp. 3-7). Hybrid additions were numerous, and we find Cattleya Lawrenceana, Disa tripetaloides, Cypripedium Rothschildianum and C. Sanderianum added to the list of parents for the first time, while the genus Vanda was also added to the list.

In the following year the imported novelties included Dendrobium Sanderianum and D. Hildebrandii, with a good many others of more

botanical interest, and among the noteworthy events of the year was the flowering at Kew of two species of Neuwiedia, the most primitive of existing Orchids, the reappearance of a female flower of Cycnoches Loddigesii, after the lapse of half-a-century, in the collection of H. J. Elwes, Esq., the appearance of a natural hybrid Vanda, V. Charlesworthii, and of the albino Odontoglossum Rossii immaculatum, in the collection of O. O. Wrigley, Esq. Hybrid additions were numerous, and included Sobralia Veitchii, Epilælia Hardyana, Cattleya Fabia, Mantinii, Wendlandiana and Atalanta, several good Læliocattleyas, and a host of others, these including additions from twenty-three different collections. Descriptions of many of them appeared in our pages.

Among natural hybrids were recorded, Vanda Charlesworthii (Bensonii × cœrulea), Cattleya venosa (Harrisoniana × Forbesii), Læliocattleya Pittiana (C. amethystoglossa × L. grandis), and Catasetum splendens (macrocarpum × Bungerothii), the latter in a multitude of forms which made quite a sensation, a group of them receiving a Silver Banksian Medal from the R.H.S. The appearance of Calanthe Veitchii as a wild plant was also recorded.

The Temple Show was on this occasion extended over a third day for the first time, and there was a brilliant show of Orchids from as many as twenty-seven exhibitors. There was also an International Exhibition at Antwerp, respecting which we remarked that never in Belgium were Orchids better represented. (*To be continued*).

ODONTOGLOSSUM CARINIFERUM.—The *Orchid Review* for October is welcome, and contains much interesting matter. Odontoglossum cariniferum, noted on p. 224, I have in bloom now. It must be locally an abundant Orchid, as it used to appear in quantity in the streets of San José, though not to the extent of any of the more popular species here. I should not think it probable that it occurs at the same elevation as O. Oerstedii, as stated in Messrs. Veitch's note. O. Schlieperianum would be a likely companion species. Although I have never seen it from Poas, there is no reason why it should not be abundant at suitable elevations (5500 to 6500 feet), as at Irazu. O. Oerstedii is found at 7500 feet upwards, associated with Oncidium Warscewiczii. Conditions may vary on the more southern ranges, which I have not visited, Santa Maria de Dota, and those running down to Chiriqui. I surmise that O. cariniferum is more abundant down that way. One of the spikes of O. cariniferum bore over eighty blooms. Having Miltonia Endresii in bloom at the same time I have tried the cross. M. Endresii is a very free-seeding Orchid, and nearly all the blooms are fertilised in a state of nature.

C. H. LANKESTER.

Carthago, Costa Rica.

ROOT-FUNGI OF ORCHIDS.

UNDER the title "Recent developments in the Study of Endophytic Mycorhiza," an interesting summary of the experiments of the late M. Noel Bernard with the Root-fungi of Orchids, by Miss M. Chevely Rayner, B.Sc., has recently appeared (*New Phytol.*, 1916, pp. 161-175). The presence of endophytic fungi in the roots of certain Orchids had been described by several authors, but it is pointed out that when Bernard undertook his researches no information was available as to the time or mode of infection of the Orchid seedling, nor yet of the degree of dependence—if any—of the two organisms upon one another, or of the systematic position of the fungi concerned. Bernard was aware that great difficulty was experienced in germinating the seeds of certain Orchids—a source of much loss and inconvenience in this branch of horticulture—and he sagaciously assumed that the practical difficulty might have to do with a critical stage in infection by the appropriate fungus. He thus summarised the chief objects of his investigation:—

1. To germinate seeds of the Orchids under aseptic conditions on sterilised media suitable for their culture.

2. To isolate the root-fungi, grow them in pure culture and identify them with certainty.

3. To compare—for each Orchid species—the behaviour of aseptic cultures with those of seeds infected by the endophyte.

By using seeds removed aseptically from sterilised capsules and sown under aseptic conditions, Bernard demonstrated the impossibility of raising uninfected Orchid seedlings, and showed incidentally that infection takes place subsequent to seed-sowing. He then proceeded to isolate and cultivate the root-fungi from various species of Orchid, and was successful where all previous workers had failed. He tested the identity of the fungi isolated in this way by the inoculation of sterile seeds, induced successful germination of the most refractory species by this means, and so demonstrated conclusively the obligate nature of the association.

In later papers he described the details of infection in various Orchids and the germination thereby effected, together with many interesting observations showing the delicacy of the physiological adjustment. For example, early experiments with Cattleya and Cypripedium showed that the fungus for Cattleya was effective in inducing germination of seeds of Cypripedium, and *vice versa*. With species of Phalænopsis, Vanda, and Odontoglossum, in which the seeds are notoriously difficult to germinate, the relation is more specialised, and each plant species has its specific endophytic which alone is effective in causing germination. This specificity

was shown experimentally by sowing seeds of Phalænopsis and infecting some cultures with their own endophyte and others with fungi obtained from the roots of Cattleya and Odontoglossum. Thus, using the endophyte from Cattleya, the seed was killed, no germination took place, and there was no digestion of the fungus by the cells of the embryo. With that from Odontoglossum, infection of the seed occurred, germination was at first normal, but was followed by the digestion of the fungus in the cells of the embryo and subsequent arrest of growth. Infected by the fungus found in the parent plant, germination proceeded in the usual way and gave a well-developed seedling. Again, a high degree of physiological adaptation was shown by experimental cultures which indicated a critical stage in the development of the seedling—earlier or later according to the species. In some Orchids practically no germination takes place without infection; in others, presumably relatively primitive, *e.g.*, Bletilla hyacinthina, development goes as far as the production of a tubercule with several leaves; it never reached the stage of root-formation in any species investigated by Bernard. Of great biological interest also is the experimental demonstration that the Orchid plant sets a limit to the spread of its fungus partner, shown not only by digestion of the mycelium in certain cells of the root, but also by complete exclusion of hyphæ from the chlorophyllous tissues of the shoot.

In 1909, Dr. Hans Burgeff published a monograph on the root fungi of Orchids, in which he reviewed and confirmed the work of Bernard. He also gave an account of his own researches on the mycorhizal fungi of many Orchid species, which he referred to a new genus, called Orcheomyces, without making any definite suggestion as to its systematic affinities. Bernard had referred these endophytic fungi to the genus Oospora when first isolated, but afterwards transferred them to Rhizoctonia. Both Bernard and Burgeff found that these root-fungi could be grown on artificial media. The latter cultivated one species for over two years without its vitality being impaired, and he expressed the opinion that in some cases the fungi isolated from native Orchids can be used for inducing the germination of tropical species. The series of experiments suggest that the degree of dependence varies in different Orchids. The more specialised the relation between the two partners, the more easily is the adjustment thrown out of gear by cultivating the fungus outside the plant.

When growing as endophytes, spores are not formed, hence the systematic position of the fungi remains doubtful, a point which gives a special interest to the case of the curious saprophytic Orchid, Gastrodia elata, as described by Kusano, in 1911 (*Journ. of Agric.*, Tokio, vol. iv No. 1). Gastrodia elata is a native of Japan, where it is frequently found growing in oak woods. It had been assumed to be a humus saprophyte

with mycorhiza, but Kusano demonstrated a remarkable case of symbiosis between it and the fungus known as Armillaria mellea (one of the Agarics), a common fungus on dead and living roots of Quercus in the neighbourhood, and which is recorded as a troublesome parasite on the potato-tuber on farms near the woods. The history of the association is given, and it is said that without infection by the fungus the Orchid is incapable of flowering. After infection, food materials, derived from the fungus, accumulate in the cells, serving ultimately for the development of the inflorescence and for the nutrition of the daughter-tubers. The latter continue to grow as long as they remain attached to the parent-tuber, but afterwards the majority (failing infection) undergo a gradual diminution in size from lack of food material, and die without flowering.

It is a complex relationship. The fungus is parasitic in its mode of entry and in its behaviour in certain zones of the infected cells, but in another region there is accumulation of food material brought in by the fungus, and the mycelium is ultimately digested. Upon this food the production of flowers and the nutrition of the offsets, or young tubers, is entirely dependent, and the Orchid must be regarded as completely parasitic on the fungus during part of its life history. The fungus, however, is entirely unmodified by the association, and produces normal fructification, a condition unique among fungi forming endotrophic mycorhiza.

Nothing is yet known of the behaviour of the germination of the seeds of this curious Orchid, but it is remarked that in view of the dependance of the majority of Orchid seeds upon infection at a critical stage of germination, and of the observed facts of vegetative infection of the Gastrodia tuber, the results of experimental seed culture will be awaited with particular interest. Kusano, indeed, suggests that in Gastrodia there is represented the first step in the formation of a special mode of parasitic life, which gives rise ultimately to a reciprocal exchange of food-materials, hence he regards the arrangement as probably a primitive stage, but Rayner well remarks that the conclusions are open to criticism in view of the extreme specialization and reduction of the Orchid, and difficult to maintain after his demonstration that the rôle of "host" is played by the fungus and not by the Orchid-tuber.

We would add that Gastrodia elata also flourishes in the Himalayas, and it would be interesting to know if the same fungus also serves there as host. The relationship is not necessarily exclusive, and in any case Armillaria mellea is a widely-diffused fungus in temperate regions, extending far beyond the limits of the Gastrodia. G. elata, again, is only one of at least a dozen species of a genus that extends from Japan and North India through the Malay Archipelayo to Australia and New Zealand, so that there is a wide field for observation.

As to *symbiosis* in general, we see that it is a kind of balanced parasitism, in which both parties to the arrangement derive some benefit. The fungus mycelium first invades the root as a parasite, and grows for a time in the root tissues, but ultimately the plant, by digesting the invading mycelium, recovers the material of which it has been robbed, and, as Rayner concludes, "the flowering plant possessing mycorhiza has done more than hold the invader in check; it has turned the intrusion to its own advantage." The special relationship has become obligate on the part of the flowering plant, and it has further solved the problem of securing infection by the fungus mycelium. The evolutionary history must have been long and complex, and it is suggested that the case of Gastrodia elata may represent one of the side lines of development that will doubtless be brought to light. Observations on other species of Gastrodia would be specially interesting in this connection.

BRASSOCATLÆLIA OPHIR.—The fact to which you call attention at page 42, in commenting on the beautiful Brassocatlælia Lady Manningham Buller, is one of the commonest experiences of hybridists, and the writer is informed that another seedling of the batch has flowered and proved worthless. A similar case occurred a few months earlier. A First-class Certificate was awarded by the R.H.S. to a very fine hybrid, and a flower from another seedling of the batch was shown, and was not considered worthy of mention. It was inferior in every respect, and had this particular seedling flowered before the other the cross would probably have been considered a failure. Any attempt to sell these inferior forms when out of bloom under the certificated names would be considered little short of fraud, As a rule nothing further is heard about them, but every hybridist has experience of them, though the disparity is often not so great. The rule of regarding seedlings out of the same batch as forms of one is a good one, and serves to keep together colour variations of the same hybrid in a way that nothing else can, but it has its inconveniences, and the system which you have consistently advocated, of giving a specific name to which exceptional forms can always be added as varieties, should be uniformly adopted. It gives a useful piece of historical information which would otherwise be lost. For example we are now getting a lot of albino Cattleyas which are more like each other than they are to the ordinary forms of the same hybrid, but if one calls them Cattleya Claesiana alba, C. Enid alba, &c., their relationship is apparent at a glance.—ORCHIDIST.

[We remember the flower alluded to, but it was not labelled. The point of the argument, of course, is that the specific name should be limited to a single word, in accordance with the rules. Some remarkable cases of variation have already been illustrated and we hope to give others.—ED.]

CYPRIPEDIUM VENUS.

CYPRIPEDIUM Venus is a very charming hybrid between C. insigne and C. niveum, and its variety Boltonii, in which typical C. insigne is replaced by the yellow variety Sanderæ, is probably the most beautiful white Cypripedium yet raised, and considerably different from the more

Fig. 1. CYPRIPEDIUM VENUS.

typical forms, one of which is here figured. It is likely that continued crossing with the numerous winter-blooming kinds will lead to further developments, and we believe that experiments are in progress. What is wanted is a combination of the constitution of the C. insigne set with more of the floral character of C. niveum, and it may be reached by further experiments.

"THE ORCHID REVIEW" AND ITS EDITOR.

WHEN, a quarter of a century ago, the first number of the *Orchid Review* appeared, there were people who prophecied a very short life to a journal devoted entirely to the interests of so specialised an industry. The fact that it has continued over this period, and is still carrying on after three and a-half years of the Great War, is sufficient evidence of the part it has filled in the affections of the Orchidophiles, to whom it has long been the guide, philosopher, and friend. To its pages one may turn when in search of information on any point, whether as regards cultural or historical details, nomenclature, or other matters, with the assurance that the subject will be treated in a concise, authoritative, but, withal, interesting manner. Before the advent of the *Review* Orchid lovers had to be content with a literature sandwiched here and there among a multitude of horticultural matters in general, with a corresponding difficulty of consulting it afterwards. In this connection the projected general index to the twenty-five volumes will be invaluable.

It is little difficult to pick out from such a wealth of material the outstanding contributions to Orchid literature. One may, however, instance, The History of Orchid Hybridisation, which was the leading feature of the first volume, the History of Orchid Cultivation, which commenced in the succeeding one, the series of papers on Natural Hybrid Odontoglossums, and the histories of many of the more important garden Orchids which have appeared from time to time. The series of articles on the Evolution of the Orchidaceæ and the Mechanism of Heredity have also been features of the more recent volumes. Among the articles that have always appealed to the writer, as containing sound instruction, occasionally not unmixed with amusement, have been those appearing under the titles "Dies Orchidiani" and "Our Note Book," for the subjects selected have always been topical, and the way they have been presented has given quite a character to the work. Even such an intricate and elusive subject as Mendelism has been rendered almost intelligible.

One herculean task which its Editor set itself from its inception was to clear up the confusion in hybrid nomenclature which was the inevitable concomitant of the rapid development of Orchid hybridisation. This ultimately led to the publication of the *Orchid Stud-Book*, in the compilation of which the Editor was associated with Mr. C. C. Hurst, a work which showed how numerous were the hybrids that had been saddled with several different names. The work entailed must have been tremendous, and several useful Addenda have since appeared in the *Review*. We hope for a continuance in the future.

One cannot give to the *Orchid Review* the credit that is due for its pioneer work in purely Orchid journalism without also saying how enormously this is due to its Editor, Mr. R. A. Rolfe, whose gallant attempt to regain the lost prestige of British Orchidology, should secure our hearty gratitude and support. It must have entailed much strenuous work in what should have been the leisure time of a busy life, but which, instead, he has preferred to devote to the further development of Orchidology. It will certainly be assessed at it full value by posterity.

One can only conclude by wishing to the *Review* and its Editor such success as they have undoubtedly deserved, and a happy emergence from the difficulties of these troublous times. ORCHIDOPHILE.

"34, REDCLIFFE GARDENS,
SOUTH KENSINGTON, S.W. 10.

"DEAR MR. ROLFE,—Accept my sincere congratulations on the completion of the twenty-fifth volume of the *Orchid Review*, a publication which must become more and more valuable as time goes on.

"While it has no doubt given you much hard work, it has, I know, at the same time been a real labour of love with you, and you will always have the satisfaction of feeling that the publication occupies a very important position in Botanical and Horticultural Libraries. With best wishes for its continued success, I am, yours faithfully,

"HARRY J. VEITCH."

We have to thank the Editors of the *Gardeners' Chronicle* and the *Garden* for complimentary notices of the *Orchid Review* and its twenty-five years' work. The former remarks :—

MR. R. A. ROLFE AND THE "ORCHID REVIEW."—The receipt of the issue of the *Orchid Review* for November-December, 1917, reminds us that it completes the 25th volume of this useful periodical. Some of our older readers will remember the circumstances which prevailed at the time of its promotion." After briefly recounting these, it proceeds: "For a period there was some doubt as to who would take up the work, . . . but eventually, by the devotion of Mr. R. A. Rolfe to the study of Orchids at Kew, and later by the establishment of the *Orchid Review*, all was done that was possible to help forward the cultivation of Orchids in this country, and to maintain the interest of those engaged in raising new hybrids. It is only those most intimately associated with the Editor and the plants treated upon in his journal, who know the difficulties he had to overcome for some years. Indeed throughout the whole period the task of keeping the *Review* up to the high level it has attained has been considerable. At the present time, when the mind and energies of this nation are mainly directed

to other matters than Orchid cultivation, this pursuit does not loom so largely as it has done in past years. But collections must be maintained, even in such a period as that through which we are now passing, for the named hybrids and the many thousands of as yet unnamed seedlings represent a sum of energy which must not be wastefully thrown away. It is satisfactory, therefore, to know that in spite of the difficulties connected with the printing of journals, the *Review* is to be continued, and we hope that on the resumption of peace it will enter upon a period of increased success."

We have to thank other correspondents for congratulations and good wishes for the future. We rely on their assistance in tiding over the difficulties mentioned last month, and will report when the matter has had time to mature. We hope to enlist the support of all lovers of Orchids, and we anticipate a considerable development when normal times return. In the meantime everything should be done to keep alive the interest.

SCHOMBURGKIA SPLENDIDA, Schlechter.—A fine Schomburgkia has just flowered in the Kew collection, which proves identical with S. splendida, a species described about four years earlier (Schlechter in *Fedde Repert. Nov. Sp.*, xii. p. 212). The Kew plant was presented by H. J. Elwes, Esq., Colesborne Park, Glos., and on flowering it proved identical with dried specimens in the Herbarium. A further search among described species not represented there led to its identification. S. splendida was described from specimens collected at Boqueron del Dagua, on the western Cordillera of Colombia, in 1905, by H. Pittier. The earlier specimens alluded to were collected by Ed. Andre on rocks between Jimenco and Marengo, on the Rio Dagua, as long ago as April, 1876, and by Lehmann on the Rio Esmita. S. splendida is one of the largest specimens in the genus, and bears large, fusiform, diphyllous pseudobulbs, and scapes some four feet long, with large lanceolate-oblong bracts, and about ten to fifteen flowers. The sepals and petals are nearly two inches long, very undulate, and of a dark brownish purple colour, while the three-lobed lip is rose-purple, with a paler centre. It is most comparable to an enlarged edition of S. undulata. There is one marked discrepancy, the peduncle being described as 10 cm. long (about four inches), but this probably arose from the omission of a "0," as such a short scape is unknown in the genus. The appearance of the species in cultivation is interesting. About ten species of the genus are now known, and most of them have appeared in cultivation at one time or other, though from their somewhat unwieldy size they have never become popular. The species of the S. tibicinis group now constitute a distinct genus under the name Myrmecophila.—R.A.R.

CALENDAR OF OPERATIONS FOR JANUARY.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

ANOTHER new year brings with it the necessity of beginning again our cultural routine, but before we start upon that errand it may be permissible to glance back at the past quarter of a century. Those of us who can remember the first number of the *Orchid Review*, and are lucky enough to possess the whole series complete, will be able to realise the progress made during that period. The popularity of Orchids has enormously increased, whilst their cultivation is much better understood. In the routine of Orchid culture, in recording the great advances made in hybridisation, and in fact in every branch of the cult the *Review* has worthily upheld its promise. In the thorny subject of nomenclature our worthy Editor has every reason to feel proud of his work, and the ends attained. Personally, I wish to congratulate him in what he has accomplished during the twenty-five years of its existence—no mean part of a life-time—and I am sure there are many who will echo the same sentiments. That he may live to see many more volumes accumulate, and the *Review* grow and increase in influence and popularity is the earnest wish of one who has appreciated the work from its commencement.

With the increasing difficulties caused by the war, I trust that these notes may be doubly useful during the present year, for, owing to the depleted staffs, a good deal of outside and inexperienced help is being called into requisition, and owners of collections are themselves, in some cases, largely dependent upon their own cultural skill.

TEMPERATURES.—The most suitable temperatures for the different departments are as follows:—

Cool house; Day, 50° to 55°; with sun, 60°; night, 50°.

Intermediate house: Day, 60° to 65°; with sun, 60°; night, 57° to 60°.

Cattleya and Mexican house: Day, 60° to 65°; with sun, 68°; night, 58°.

Stove or East Indian house: Day, 65° to 70°; with sun, 75°; night, 65°.

These figures are given as a guide, as no harm will accrue from slight variations either way, in accordance with outside conditions, but it must not be overlooked that healthy suitable conditions will alone secure satisfactory growth.

VENTILATION.—At all seasons of the year fresh air must be admitted to the houses, as Orchids cannot make satisfactory growth without it, and it should be admitted whenever the outside conditions will allow. The different houses vary considerably in their requirements in this respect, and discrimination must be used to prevent draughts from reaching the plants, which is injurious.

ATMOSPHERIC MOISTURE is used to counteract the artificial heating of the houses, and the amount must be regulated according to the amount of heat necessary to maintain the temperatures. The outside conditions of the atmosphere will have a bearing on this matter, and in damp weather much less will suffice than when the sky is clear and bright. Atmospheric moisture is necessary to the plants' growth, and to prevent attacks of thrip and other insect pests. It is applied by damping the floors, the staging between the plants, and in fact everywhere except the plants themselves, and is termed damping down.

WATERING, or the application of water to the compost, is practically the whole secret of plant cultivation in glasshouses. It is impossible to define the amount of moisture each individual plant should receive, but a safe line to draw is as follows :—

All growing plants should have water applied to them whenever they become dry, whilst those at rest should on no account be allowed to shrivel. Excess in either direction is equally injurious.

CATTLEYAS AND ALLIES.—Cattleya Percivaliana and Trianæ, with their hybrids, are developing their flowers, and should be given a light position. It is possible, with the many lovely hybrids now in existence, to produce a display of these plants in the dull dark days of winter, which years ago would have been considered adequate to the bright days of summer.

LÆLIA ANCEPS AND ITS VARIETIES, as they pass out of bloom and commence to push new roots, may be repotted as advised last month.

CŒLOGYNES.—C. cristata and its varieties have their flower spikes well advanced, and should be carefully watered, as an excess at the roots, or overhead, may cause them to decay. The rare C. Mooreana is a most lovely Orchid that produces its blooms at this season. It is easy to grow if treated much in the same manner as C. cristata, but prefers the warm end of the Intermediate house. This genus must not be exposed to too much sunlight at any season, as their leaves readily scorch, especially if the plants are at all dry. C. elata and C. ochracea are also pushing up their flower spikes, and require water whenever they become dry. Plants of C. pandurata, C. Massangeana, and others that have not as yet commenced to grow must still be kept on the dry side. These beautiful plants, to my mind, deserve extended culture, as even the most modest of them are delightful objects when in bloom.

MILTONIAS of the Brazilian section should be examined to see if any of the plants are in need of more pot room, or new material. It is necessary, perhaps, here to point out that a plant may want repotting without being placed in a larger receptacle, through the compost becoming decomposed. In some cases a plant will deteriorate from causes not always apparent, and it will then be advisable to place the plants in smaller receptacles so

that they may become well rooted. Roots are the feeders for plants, and no plant can survive long if the root action is not thoroughly healthy, hence the necessity of paying great attention to the condition of the compost of every plant. Miltonias of this section, being dwarf growers, do best in shallow pans suspended from the roof. All old and useless pseudo-bulbs should be cut away, and the growing pieces made up afresh, giving each leading growth room to develop. Those pieces which have few roots to hold them in position should be pegged firmly down to the compost, as no plant can root if at all loose. The whole of these Brazilian Miltonias succeed satisfactorily in a shady part of the Intermediate house. They delight in ample drainage and, being surface rooters, no great depth of material is necessary. For compost at the present time there is not much choice, as osmunda fibre is practically unobtainable, and we have to rely entirely on AT and peat fibre. For these plants the former answers admirably, cut up moderately fine, and placed rather firmly around the rhizome of the plants. For some time water must be afforded with great care, as the young growths, as well as the new roots, are liable to decay if too much be given, but when re-established in the new material the compost should be kept moist. The alteration from one material to another is not always to the plants' benefit, but what cannot be avoided has to be put up with; the only remedy is to pay closer attention to the condition of the plants.

SOPHRONITIS GRANDIFLORA is now in bloom, and few Orchids surpass this beautiful Cool house species in effect. The plants are best grown in well-drained shallow pans, using a very thin layer of clean fibre for them to root in. Repotting may be done when growth commences, or immediately after the flowers fade. These, and all other small-growing plants, are best suspended from the roof, where they may receive the maximum amount of light.

CYPRIPEDIUMS which produced their flowers in October, and have now passed out of bloom, should be examined, and any that are in need of repotting should have attention. C. insigne Sanderæ is one which always produces its flowers early in the season, and can have attention immediately its flowers are faded. There are many others which may be treated in a similar manner. These plants are best potted moderately firmly in a compost of two parts peat fibre, one of loam fibre, and one of live sphagnum moss. The later-flowering plants, which are now either in bloom or pushing up their flower spikes, may be done at a later period. The summer-flowering varieties, both species and hybrids, must have water afforded them whenever they become dry: in fact, these plants at no time should be allowed to suffer for the want of it.

DENDROCHILUMS.—As soon as the growth of D. glumaceum and its

variety validum has attained the height of two or three inches they commence to push forth new roots, and if repotting is contemplated this is a suitable time to undertake the operation. They succeed in a similar compost to Cypripediums, and should be repotted in the same manner. They delight in a fairly humid position in the Intermediate or Cattleya house, and the delicate grass-like flower-spikes of D. glumaceum make it an acceptable ornament to our houses.

ODONTOGLOSSUMS.—Plants of this genus will be in all stages of growth. Many will be pushing up their flower spikes, and the latter should have every attention as regards staking, to prevent them from becoming a prey to slugs and other pests, which readily devour them. Plants of O. Edwardii, or any of its hybrids which have recently bloomed and are starting well into growth, should be attended to if repotting is necessary. If such plants are well established, having sufficient space to develop, and the material in good condition, they may stand over to another season with safety. All Odontoglossums delight in a good free drainage, and will succeed in two parts AI fibre to one of sphagnum moss. Any plants, either species or hybrids, with growths which are some two or three inches in height and are about to push new roots, may be repotted if the compost is decomposed or the plant is in need of more root room. These early-potted plants, when the compost becomes settled and the moss commences to grow, form suitable seed-beds to sow seeds upon of almost all cool-growing Orchids. The seeds should be sown thinly over the surface, and be kept moist at all times. Extreme care should be taken in the application of water to the seed beds, as there is great danger of washing the seeds away. It is best applied with a very fine sprayer. When the young seedlings make their appearance, they should be removed to a light and airy position to prevent them from damping off. This is a simple and easy method for those who are anxious to raise seedlings for the first time, and experience and practice will teach them what are the requirements of the young plants.

CALANTHES which have produced their flowers should be rested as advised last month, until they start to grow in the spring.

GENERAL REMARKS.—The busy season is fast approaching, and a little forethought will save much time at a later period. A stock of potting and other materials should be obtained, so that when the potting season is upon us there is no delay for the want of materials. Neglect in potting Orchids does not pay in the long run, as a half-starved plant takes much longer to re-establish itself than a healthy one. The cleansing of the houses and their inmates should be brought to a conclusion as speedily as possible. A remorseless warfare against all insect and other pests must be waged at all times

CYPRIPEDIUM LORD-WOLMER WESTONBIRT VAR.

THIS model winter-blooming Cypripedium affords a good example of the great improvement that is being effected in the genus by hybridisation and selection. It was derived from C. Leeanum × C. Euryades leopardinum, and thus C. Leeanum is twice represented in it, for C. Euryades is itself the product of C. Leeanum × Boxallii. It was exhibited

Fig. 2. CYPRIPEDIUM LORD-WOLMER WESTONBIRT VAR.

at a meeting of the R.H.S. held in December, 1911, by Lt.-Col. Sir G. L. Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), and received an Award of Merit. The flower is of excellent shape and substance, and the resemblance to C. Spicerianum in the dorsal sepal, with its broad median and, will be at once apparent. The copious spots on this organ are bright purple, except on the small green basal area, where they are purple-brown. The broad petals and lip are shining purple-brown, and show the influence

of C. Boxallii, while the C. Spicerianum character is very marked in the staminode. The much enlarged lower sepal, with the colouring of the dorsal, is another marked feature of this handsome variety.

SOCIETIES.

ROYAL HORTICULTURAL.

THE last meeting of the year was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on December 4th, 1917, and produced a fine display of Orchids, the awards consisting of a Williams Gold Medal and two other Medals, and two Awards of Merit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), W. Bolton, E. R. Ashton, Arthur Dye, R. Brooman White, F. J. Hanbury, C. H. Curtis, Pantia Ralli, T. Armstrong, W. H. Hatcher, S. W. Flory, R. A. Rolfe, J. Charlesworth, J. E. Shill, Sir Harry J. Veitch, F. K. Sander, and Walter Cobb.

AWARDS OF MERIT.

CYPRIPEDIUM INSIGNE VAR. LOUIS SANDER.—A remarkably fine variety of the Harefield Hall type, and having a very broad dorsal sepal, yellow-green below and white above, with large red-brown blotches, changing to clear purple on the white area, and the broad petals and lip reddish brown. Exhibited by Messrs. Sanders.

SOPHROCATTLEYA FABORIS (C. Fabia × Sc. Doris).—A brilliant hybrid, approaching the Cattleya parent in size and shape, the sepals and petals canary yellow, and the lip rose, tinged with reddish purple, and some darker veining on the front lobe, with yellow veining in the throat. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

GENERAL EXHIBITS.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Miss Robertson), showed Læliocattleya Serbia var Opal, a beautiful form, having white sepals and petals and a purple front to the lip, and Sophrocatlælia Marathon Bryndir var., with rosy-mauve sepals and petals, and a ruby-crimson lip with yellow veining in the throat.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a very fine group, to which a Williams Gold Medal was awarded. The outstanding feature was a series of the beautiful Cattleya Maggie-Raphael var. alba, having white sepals and petals and a coloured lip, but promising novelties were seen in Læliocattleya Diana var. Buttercup (Jacobus × Ophir), with yellow sepals and petals, and a reddish-rose lip, with some purple veining on the side lobes, and Cypripedium Arthurianum nobilior (insigne Harefield Hall var. × Fairrieanum), with handsomely blotched dorsal sepal.

We noted also examples of Odontioda Cupid, Cattleya O'Brieniana alba with four flowers, some fine Odontoglossum crispum and seedlings flowering for the first time, Masdevallia polysticta, several fine Cypripediums, and other good things.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Banksian Medal for a choice group, including Læliocattleya Selene (Lc. Fascinator × C. Trianæ), a promising hybrid, having white sepals and petals tinged with rose, and a broad purple lip, with yellow in the throat, Lc. Cappei with seven flowers, a fine Lc. Serbia, a few good Cattleyas, Odontoglossum xanthinum (armainvillierense xanthotes × luteopurpureum Vuylstekeanum), an interesting seedling prettily blotched with yellow on a paler ground. Cypripedium Oberon, and a number of well-grown, blotched Odontoglossums at the back.

Messrs. Sanders, St. Albans, received a Silver Banksian Medal for a good group, in which we noted an example of the rare Arachnis Clarkei, Cattleya Maggie-Raphael albo-cœrulea, white, with violet-rose front to the lip, Cypripedium Hippolyta (Dante × Hera Euryades), C. Antinous, C. Corsair (Niobe × Thompsonianum), a well-marked flower of the Niobe type, and other interesting things.

Messrs. E. H. Davidson & Co., Orchid Dene, Twyford, sent Sophrocattleya Dorcas (Sc. Dora × C. Dowiana aurea), a promising thing with yellow sepals and petals, and a rosy lip, veined with orange at the base, and Sophrocatlælia L. McKenna (Scl. Œdippe × C. Dowiana aurea), a dark claret-purple hybrid.

Messrs. Stuart Low & Co., Jarvisbrook, staged a small group of good things, including a fine Sophrocattleya Doris, Læliocattleya Pearl, Lc. Alex, Lc. Soulange, and Cattleya Alcimeda alba.

MANCHESTER & NORTH OF ENGLAND ORCHID.

A highly successful meeting was held at the Coal Exchange, Manchester, on Thursday, November 15th, 1917, when the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, P. Foster, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, F. K. Sander, W. Shackleton, H. Thorpe, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum Golden Oriole, a beautiful yellow flower, with deeply-coloured lip, and Sophrocattleya Dorea magnifica (C. Dowiana aurea × Sc. Doris), a fine, richly-coloured form; from S. Gratrix, Esq.

Odontoglossum Edna var. Beauty (Rossii × armainvillierense), a large white flower, prettily spotted on the sepals and petals, and Læliocattleya

Gothyus (C. Tityus × Lc. St.-Gothard), a large purple flower, with intensely-coloured lip; from P. Smith, Esq.

Cypripedium Gen. Allenby (Hera Euryades × Royal George), a large, well-set flower, the richly-coloured dorsal sepal margined with white; from T. Worsley, Esq.

Cattleya Fabia Regina, a good form, with white sepals and petals, and richly-coloured lip; from Messrs. Sanders.

AWARDS OF MERIT.

Cattleya armainvillierensis Ashworthii (Warscewiczii × Mendelii), C. Fabia alba vars. Ashworthiæ and ashlandensis, C. labiata Mrs. Briggs-Bury, Læliocattleya Hadrian var. Ashworthiæ, Lc. Orion Ashworthiæ, and Brassocatlælia Ashworthiæ (Bcl. Cooksonii × C. labiata); from R. Ashworth, Esq.

Cypripedium Gen. Pershing (Harri-Leeanum × Euryades splendens), and C. Harrocksianum (Harrisianum × St. Alban); from T. Worsley, Esq.

Læliocattleya Alex West Point var. (Lc. Cappei × C. Dowiana aurea), and Cypripedium Golden-Fleece West Point var.; from S. Gratrix, Esq.

Odontoglossum crispum Siptah; from Dr. Craven Moore.

Cattleya Triclotho (C. Trianæ Grand Monarch × C. Clotho); from P. Smith, Esq.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum Dorothea (Doris × crispum); from Dr. Craven Moore.

FIRST-CLASS CULTURAL CERTIFICATES.

To Mr. Lupton, for Cypripedium Leeanum giganteum, C. insigne Baron Schröder, and Oncidium tigrinum.

To Mr. E. Rogers, for Epidendrum vitellinum autumnale and Oncidium Forbesii.

To Mr. T. Wood, for Cypripedium Fairrieanum.

To Mr. S. Davenport for Cattleya Lord Kitchener.

A Silver-gilt Medal was awarded to R. Ashworth, Esq., Newchurch (gr. Mr. Davenport), for an excellent group, in which Cattleyas and Cypripediums were particularly well represented, with Læliocattleya luminosa aurea, the rare Miltonioda Harwoodii, Cœlogyne Mooreana, and others.

Large Silver Medals were awarded to Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), and to T. Worsley, Esq., Haslingden (gr. Mr. T. Wood), for fine groups, consisting largely of choice Cypripediums, with a few other good things.

Silver Medals were awarded to John Hartley, Esq., Morley (gr. Mr. Coupe); to Messrs. Cypher & Sons, Cheltenham, and to Messrs. Sanders, St. Albans, for good groups, the two former of choice Cypripediums, the latter including also a few good Cattleyas and the rare Cirrhopetalum Rothschildianum.

Interesting exhibits were also staged by the Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers); S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); Messrs. Hassall & Co., Southgate, and Messrs. J. & A. McBean, Cooksbridge, several of them figuring in the above list of Awards.

The Secretary regrets to record the death of A. J. Oakshott, Esq., of Bidston, Cheshire, an enthusiastic member of the Society.

At the meeting held on December 6th the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, A. R. Handley, A. Hanmer, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. Shackleton, H. Thorp, and H. Arthur (Secretary).

First-class Certificate.

Cattleya Helen-Langley The Knowle var. (Dusseldorfii Undine × Myra-Peeters), a large, well-set flower, white, with purple marking on the lip; from John Hartley, Esq.

Awards of Merit.

Brassocattleya Penelope (Bc. Digbyano-gigas × C. Fabia), Odontoglossum Gladys (cirrhosum × crispo-Harryanum), Cymbidium Schlegelii Ashworth's var., Odontioda Mars, and the rare Arachnis Clarkei: from R. Ashworth, Esq.

Cypripedium Formidable (Mastersianum × Alcibiades), C. Alport-Alpha), and Læliocattleya Jacinth (C. Trianæ × Lc. Pizarro); from S. Gratrix, Esq.

Cypripedium Col. Hennah (Leeanum Clinkaberryanum × Antinous); from the Hon. Robert James.

Læliocattleya bella alba Beardwood var.; from Col. Sir J. Rutherford, Bart., M.P.

Awards of Appreciation.

Odontoglossum crispum Noel (1st class); from S. Gratrix, Esq.

Odontoglossum Heliotrope (2nd class) (Pluto × Black Prince); from R. Ashworth, Esq.

A Large Silver Medal was awarded to R. Ashworth, Esq., Newchurch (gr. Mr. Davenport), for a very fine group, consisting principally of Odontoglossums and Cypripediums, with examples of Brassocattleya Penelope, Arachnis Clarkei, Cymbidium Schlegelii Ashworth's var., and others.

A Large Silver Medal was also awarded to W. R. Lee, Esq., Heywood (gr. Mr. Branch), for a very fine group of Cypripediums and some choice Odontoglossums of the xanthotes section.

A Silver Medal was awarded to A. Hanmer, Esq., Chester (gr. Mr. E. Palin), for a group of select Cypripediums, including C. bingleyense, Sir Redvers Buller, Dreadnought, King George V., Oberon, Queen Alexandra, and various others.

A Silver Medal was also awarded to Messrs. Cypher & Sons, Cheltenham, for a fine group, consisting chiefly of choice Cypripediums, with examples of Cattleya Fabia, *Zena*, excelsa, and others.

Interesting exhibits were staged by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); The Hon. Robert James, Richmond, Yorks. (gr. Mr. J. Benstead); Col. Sir J. Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton); John Hartley, Esq., Morley (gr. Mr. Coupe); the Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers); Messrs. Sanders, St. Albans; Messrs. Charlesworth & Co., Haywards Heath; Messrs. J, & A. McBean, Cooksbridge, and Messrs. Keeling & Sons, Bradford, several of which are included in the above list of Awards.

NOTES FROM KEW.—I.

IT has been suggested that a series of articles, extending throughout the year, on such a representative collection of Orchids as that at Kew would be a feature of exceptional interest. We are willing to make the attempt, and will preface our notes with a few historical details, for the Kew collection is probably the oldest in existence, and can be traced back for a period of over 130 years.

In 1789 the first edition of Aiton's *Hortus Kewensis* appeared, and it contained a full-sized plate of Limodorum Tankervilleæ (now known as Phaius grandifolius), a species imported by Fothergill from China in the previous year. Three other tropical species are mentioned as being in cultivation at Kew, namely, Bletia verecunda, Epidendrum fragrans, and E. cochleatum, the two latter having flowered for the first time in the collection in 1782 and 1789 respectively. A few others, including six from North America, one from the Cape, and two from South Europe, made up a total of fifteen exotic species.

By the time the second edition of the *Hortus Kewensis* appeared, twenty-four years later, the number of exotic species, according to John Smith's *Records of Kew*, had increased to 84, the greater number epiphytal, and natives of the West Indies, a few of the East Indies, Cape of Good Hope, and New South Wales. A number of species were sent from India in the earlier part of the nineteenth century, among them being the first Aërides, the first Dendrobium, and the first Vanda. John Smith has recorded how, in 1822, he found the Indian species growing on a shelf above

a flue against the back wall in what was then called the propagating house, the Aërides growing and flowering freely, its roots clinging to the back wall, as also Saccolabium guttatum. There were also plants of Dendrobium Pierardi and D. cucullatum flowering freely, which had recently been brought home from Calcutta by Mr. Pierard. Most of the others were potted in common soil, and the pots plunged to the rim in a tan bed.

Between the years 1823 and 1825 a considerable number of species were received from Trinidad. these having been sent by Mr. David Lockhart, Superintendent of the garden there. Amongst them were the first plants of Stanhopea insignis, Oncidium Papilio, Lockhartia elegans, Catasetum tridentatum, Ionopsis pallidiflora, and others, all of which were epiphytal, and many of them being sent growing on portions of branches as cut from the trees. These, being accompanied by instructions from Mr. Lockhart as to how they should be treated, led to the successful cultivation of epiphytal Orchids.

In 1884 the valuable Orchid collection formed at Woburn Abbey was presented to Kew by the Duke of Bedford, and a year later a large span-roofed house was erected on the site of an old stove, and in Sir William Hooker's account of the house we read that "the centre is filled with a handsome slate staging, so large as to admit of a raised walk through the centre, thus enabling the visitor to look down upon each side of the house, while over his head and from the rafters on either hand are suspended wire baskets filled with beautiful tropical epiphytes." This house opened on to another cooler stove, and, the report proceeds, "we are enabled to remove the splendid epiphytes when in blossom to a less heated atmosphere, and thus preserve them in beauty for a much longer time."

In 1846 there was a further increase, by the bequest of the Rev. J. Clowes, Broughton Hall, Manchester, who willed his fine collection to Kew. Some two years later the number of species cultivated is said to have amounted to 755, and in 1850 to 830. About 1851 the smaller kinds were removed to some Orchid pits near the site of the present ones. From about 1855 to 1862 part of the collection was maintained in some old fruit houses in the Herbaceous ground, which had been remodelled and heated by hot water, and in 1862 the remainder were transferred to them, where they remained until the T-range was erected, in 1868. The eastern wing of this range was arranged as a warm and cool Orchid division, entered through a small lobby devoted to Insectivorous plants. In 1896 these two houses were replaced by four smaller ones, built on the latest principles, and these houses are still in use. The adjacent Orchid pits have also been remodelled, and at present there are four, Warm, Intermediate, and Cool, with one devoted to Dendrobiums, besides a large Cattleya house, built in 1912.

The collection is subject to modification from time to time, owing to additions and casualties, but in 1904, when the second edition of the *Hand-List of Orchids* was published, it was estimated to contain about 1850 species and well-marked hybrids, belonging to 220 genera. There have been many subsequent additions, the latest considerable one being a fine lot from the collection of the late Sir Trevor Lawrence, Bart., presented by his widow, Elizabeth Lady Lawrence, in 1914.

It is impossible to give an adequate idea of such a collection in a short notice, but it contains, in addition to the well-known showy kinds, a large number of species that are not found in private collections, and a considerable number of what are usually termed "botanical Orchids," owing to their less showy character, though they are highly interesting from the standpoint of floral structure and the striking mechanical contrivances for cross-fertilisation that they exhibit. The number of species in bloom at all seasons is considerable. A list of those that flowered in the collection in 1890 was given in the *Kew Bulletin* for 1891 (pp. 52-75), and numbers as many as 766.

At the present time there is a good show of bloom, particularly of Cypripediums, winter-blooming hybrids being well represented, and the clear yellow C. Winnianum particularly attractive. Angræcum sesquipedale and several well-grown A. eburneum are also blooming well. A group of white and coloured forms of Lælia anceps, with several Cattleyas and Læliocattleyas brighten up the Cattleya house, where some good Cymbidiums are coming into bloom. A number of deciduous Calanthes also make a fine display. The botanical rarities must be left for a future note.

OBITUARY.

WORTHINGTON G. SMITH.—The *Gardeners' Chronicle* for November 3rd last contains an Obituary notice of Mr. Worthington G. Smith, whose drawings of Orchids and other plants were for so many years a feature of that journal, and who was also a distinguished archæologist and student of fungi. He passed away at Dunstable on October 27th. The notice is accompanied by an excellent portrait, and an illustration from his own pencil, showing the artist sketching an Orchid under difficulties which we hope he never experienced, and which was doubtless helped by a sense of humour, which, it is remarked, showed itself in almost everything he touched. His contributions to Orchidology are not estimated, but they must have been enormous. As long ago as 1865 he received from the R.H.S. a Gold Medal for drawings of plants, and in 1897 he was awarded the V.M.H. for distinguished services to horticulture.

ORCHID NOTES AND NEWS.

THE opening meeting of the year of the Royal Horticultural Society is fixed for January 15th at the London Scottish Drill Hall, Buckingham Gate, Westminster, when the Orchid Committee will meet at the usual hour, 11.45 a.m. Succeeding meetings will be held on January 29th and February 12th.

The Manchester and North of England Orchid Society will hold meetings at the Coal Exchange, Manchester, on January 3rd and 17th. The Committee meets at noon, and the exhibits are open to inspection of members and the public from 1 to 4 o'clock p.m. The following meeting is fixed for February 7th.

We deeply regret to hear that Mr. H. Arthur, Secretary of the Manchester and North of England Orchid Society, has lost his only son, R. W. H. (Roy) Arthur, 22nd Batt. R.F., who was killed in France on June 9th, 1917. He joined the forces in May, 1915, went out with his battalion in the following November, and during this period had not been home on leave. Mr. Arthur himself is assisting in the local Volunteer and Red Cross work, and has been gazetted a Lieutenant (commanding a section) in the Lancashire Motor Volunteer Corps, Blackburn Station.

Flowers of Cypripedium Boxallii and Lælia anceps are sent by F. S. Mumford, Esq., Wrexham, and it is interesting to note that they are from a small amateur's collection, which gives a great deal of pleasure to its owner.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

C.H.L.—30, Chondrorhyncha albida, Rolfe in *Kew Bull.*, 1898, p. 195; 31, an Oncidium, very near the Guatemalan O. Suttonii, Lindl., but not certainly identified (a more complete specimen is desired). The white Odontoglossum is probably O. Krameri album, the albino of the species.

T.I.—We believe the hybrid to be Cypripedium Madiotianum (Chamberlainianum × villosum), as the presence of both these parents can be clearly traced. This hybrid originally appeared about twenty years ago.

W.E.—We do not find a record of the hybrid, Lælia purpurata × Cattleya Jupiter, which should be fairly intermediate between Lælio-cattleya callistoglossa and Lc. Hyeana.

We have to thank several esteemed correspondents for congratulatory letters and replies, which have been suitably acknowledged. The matter is alluded to on another page.

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THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVI. FEBRUARY, 1918. NO. 302.

TWENTY-FIVE YEARS OF ORCHIDOLOGY.

(*Continued from page* 3.)

THE closing years of the nineteenth century were marked by a decline in the number of imported novelties and an enormous increase in those raised at home. Among the imported novelties of 1895 we find the chaste Cypripedium bellatulum album, the albino of the species, C. Little. anum and C. Kimballianm, two interesting natural hybrids, Cirrhopetalum Rothschildianum, still the finest species in the genus, Dendrobium speciosissimum and D. sanguineum, two Bornean species which were soon lost sight of, Cœlogyne Veitchiana, Angræcum Eichlerianum, and a number of others. Hybrids of the popular genera were numerous, and we find that Phaius Cooksoniæ (grandiflora × Humblotii) obtained the prize for the best hybrid of the year, while Dendrobium illustre and Phalænopsis Luedde-violacea were additions of considerable interest. The flowering for the first time in cultivation of the remarkable New Guinea Bulbophyllum grandiflorum in the Burford collection, the publication of *The Orchid Hybrids* by Mr. G. Hansen, and the appearance of an account of the Orchids of the Shan States by Mr. R. Moore, the discoverer of Cypripedium Charlesworthii (*O.R.*, iii. pp. 169-172), may also be mentioned among the noteworthy events of the year.

The imported novelties of 1896 were mostly of botanical interest, Bulbophyllum Ericssonii being one of the most familiar at the present time, while the hybrids of outstanding interest in a long list included Cypripedium Baron-Schröder and Dendrobium Wiganiæ, the latter, which represented a successful attempt to introduce the yellow of D. signatum into the D. nobile group, flowering in three different collections. Odontoglossum crispo-Hallii, raised in the collection of N. C. Cookson, Esq., was particularly noteworthy, being the third hybrid of artificial origin in a genus that long defied all the efforts of the hybridist. Mr. Cookson also demonstrated the origin of the natural hybrid Cattleya Hardyana, by flowering a seedling which he had raised from C. Dowiana and C. Warscewiczii. An interesting paper on Complex Hybrid Cypripediums, by Mr. Reginald Young, in which 27 hybrids were enumerated as having

four species in their ancestry (*O.R.*, iv. pp. 361-2) may be mentioned as showing the progress that was being made in hybridisation.

The principal imported novelties of 1897 were the Philippine Dendrobium Victoria-Regina, the chaste D. nobile virginale, and Vanda Moorei, an interesting natural hybrid between V. cœrulea and V. Kimballiana. Among garden hybrids, however, there were several noteworthy additions, including Brassocattleya Thorntonii and Bc. Digbyano-Trianæ (then referred to Læliocattleya), Epilælia radico-purpurata, Epicattleya matutina, Spathoglottis aureo-Vieillardii, and Brassocatlælia Lindleyano-elegans, the latter raised by Sir Trevor Lawrence, Bart., being the second hybrid having three genera in its composition. The flowering of a plant of the remarkable Grammatophyllum speciosum in the same collection, and one of Vanda Miss Joaquim, a hybrid raised at Singapore, were also events of interest. Near the end of the year there passed away Mr. James Bateman, at the age of 86, a veteran whose active connection with Orchids extended over a period of seventy years, and who has been well described as one of the most remarkable men in the horticultural world which the century produced.

Probably the most interesting event of 1898 was the flowering in the Burford collection of the remarkable Eulophiella Peetersiana, which was illustrated as the frontispiece of our sixth volume. We may mention also the appearance of Zygopetalum Ballii, the pretty little Orchis monophylla, a native of Upper Burma, and Stanhopea Rodigasiana, a very distinct species which gained a First-class Certificate from the R.H.S. Among hybrids we may note three fine Odontoglossums from the establishment of M. Ch. Vuylsteke, of Loochristi, Ghent, namely, O. loochristiense, O. crispo-Harryanum, and O. Rolfeæ. Sophrocattleya Chamberlainii and Sc. G. Hardy were two other striking novelties of the year. The flowering of seedlings raised from Cattleya intermedia and Lælia purpurata by Messrs. Charlesworth & Co. and M. Ch. Maron, confirmed the parentage of the natural hybrid Læliocattleya Schilleriana. This was the year of the Ghent Quinquennial Horticultural Exhibition, which produced a good display of Orchids, though not equal to that staged at the R.H.S. Temple Show held a few weeks later. A disagreeable incident that somewhat marred the success of the latter Show was the loss of a choice collection of Orchids that had been exhibited by M. Jules Hye, which created a good deal of excitement at the time.

The Hybridisation Conference, held at Chiswick in July, 1899, was the great event of the year, and Orchids were well represented, both in the papers read, and in the plants shown at the accompanying Exhibition, as may be seen by the report at pp. 233-238, 252-254 of our seventh volume. Other interesting events were the introduction in quantity of Lælia

Jongheana, a species previously known by only a few examples, and of Dendrobium spectabile, a remarkable New Guinea species which had been known to science for upwards of half a century. It received a First-class Certificate from the R.H.S. Dendrobium Ainsworthii also appeared as a wild hybrid among plants of the two parents introduced from Sikkim. Hybrids of the popular genera were again numerous, and Zygobatemannia Mastersii, a new generic cross, flowered with Messrs. Linden, while Angræcum Veitchii, for which Messrs. James Veitch & Sons received a First-class Certificate, added another genus to the list successfully operated by the hybridist.

The concluding year of the nineteenth century produced interesting novelties in Cymbidium I'Ansonii, then thought to be a natural hybrid, the remarkable Trevoria chloris, Masdevallia deorsa, and a few others, and the usual crop of hybrids, among which the beautiful Cypripedium Maudiæ has proved to be the most popular, while the parentage of the natural hybrids, Odontoglossum Wattianum, Cattleya resplendens, and Lælio-cattleya Gottiana was proved experimentally. The year closed with a very interesting event, namely, the discovery of the locality in which Swainson originally discovered the popular Cattleya labiata, which had been the subject of so much controversy. It is much too long to summarise, but the story may be found in extenso at pp. 362-365 of our eighth volume.

(To be continued.)

NOTES FROM KEW.—II.

A PROMINENT feature of the Kew collection at the present time is a fine series of Cymbidiums, the majority being hybrids of C. insigne, but there are also plants of C. Schrœderi, a native of Annam, which occurs with the species just mentioned, also a good plant of C. grandiflorum, and the rare C. chloranthum, Lindl. (figured at t. 4907 of the *Botanical Magazine*), a native of North Australia, though long supposed to be Indian. Among the hybrids of C. insigne may be mentioned over a dozen plants of C. Lawrenceanum, also known as C. Pauwelsii, a hybrid from C. insigne and C. Lowianum, with plants of C. Alexanderi and C. Gottianum, which are making a fine display. The introduction of Cymbidium insigne, some fourteen years ago, gave an immense impetus to hybridisation in the genus, and it is curious to reflect that its first hybrid flowered as recently as 1911, but since that time there has been a steady accession of fine horticultural plants, and there are many seedlings in existence which have not yet bloomed. The history of C. insigne and its hybrids may be found at pp. 101-104 of our last volume.

A plant of Vanilla Pompona, one of the economic species, is bearing a few fruits in one of the warm houses, where it is trained on wires beneath the roof. It is a more robust plant than V. planifolia, and has much stouter, triquetrous fruits, which are said to be used in a fresh state for flavouring purposes in the same way as V. planifolia, but owing to their more fleshy character are very difficult to dry, hence the plants have not the same economic value. A few fruits, however, are said to find their way into the market under the name of Vanillons. The species, which is also known under the names of V. grandifolia and V. lutescens, has bright yellow flowers. The flowering of the South Indian V. Wightiana, Lindl., one of the leafless section of the genus, is another interesting event, as the species is still imperfectly known, and was long confused with the Javan V. aphylla, Blume. The flowers are rather small, and whitish, with some buff yellow on the disc of the lip. A plant flowered some years ago in the Burford collection, and the history of the species is given at p. 302 of our seventh volume.

The Odontoglossums and Odontiodas show signs of renewed activity, and many spikes are pushing up, several being already in bloom, one of the most interesting being Odontoglossum Duvivierianum, a rare Mexican natural hybrid from O. apterum and O. cordatum. This plant came from the collection of the late Mr. J. Gurney Fowler, and its history is given at p. 89 of our twenty-fourth volume. In the same house may be seen a strong plant of Chondropetalum Fletcheri, a hybrid from Zygopetalum Mackayi and Chondrorhyncha Chestertonii. Near by is a plant of the Zygopetalum parent, which it closely resembles in almost every respect but colour, though the pale yellow lip and the minutely denticulate margin show the influence of the other parent. At one end of the Odontoglossum house is a large plant of Aërides Vandarum, growing on a raft, which has occupied the same position for years, and is again flowering freely. It is interesting to note that the species also thrives in the Cattleya house, where it is showing for bloom.

A shelf over the tank in one of the warm houses forms a convenient raised position for staging any dwarf plants that happen to be in bloom, and is never without objects of interest. At the present time Cynorchis kewensis, and its C. Lowiana parent are showing for flower, both being easily grown and floriferous, C. kewensis was raised in the collection, the other parent being C. purpurascens, one of the showiest species in the genus.

Several plants of Angræcem eburneum, the original species of the genus, are now in bloom, with others of A. sesquipedale, while the equitant-leaved A. Leonis has just flowered freely, with a few of the smaller species. Stauropsis gigantea is also bearing a spike of bloom

ROOT-FUNGI OF ORCHIDS.

AN esteemed correspondent, who expresses his appreciation of the article on the Root-Fungi of Orchids (pp. 4-7), asks: Can you give us the practical side of the question? How is the fungus taken from the roots? How and upon what medium is it cultivated? Lastly, how is it then used in relation to seeds which one wishes to sow?

The following method of cultivation adopted by Dr. Hans Burgeff has been summarised for us by Miss E. M. Wakefield, who recently gave a paper on the subject before the Kew Gardeners' Mutual Improvement Society. It may seem a little complex, but the necessity of adopting what may be termed laboratory methods is due to the fact that without such control one is just as likely to obtain a crop of moulds that are useless for the purpose, or even injurious. The essential points are, to prepare a sterilised nutrient medium on which to grow the fungi; to secure the right kinds, while excluding others, and then to introduce aseptically the seeds of the Orchid which it is desired to germinate. Some knowledge of laboratory technique is necessary. The first point is to procure the necessary apparatus and to prepare the nutrient medium on which the fungi are to be grown.

Noel Bernard used a medium consisting of gelatine with about five per cent. Salep. Hans Burgeff found, however, that the following nutrient medium was preferable. It contains all the mineral salts necessary for the nutrition of both fungus and Orchid seedling:—

Dihydrogen potassium phosphate	1	gramme
Calcium chloride	0·1	,,
Sodium chloride	0·1	,,
Magnesium sulphate	0·3	,,
Iron chloride	0·01	,,
Ammonium chloride	0·5	,,

These quantities are dissolved in 1,000 grammes of distilled water or (better still) pure rain water. To make a firm medium, Agar-agar is added to this solution in the proportion of 1·5 gr. Agar-agar to 100 cubic centimetres of the solution. The Agar-agar is soaked for about twenty-four hours in the solution, and then dissolved by heating, after which is added a trace of starch (rice or potato) mixed with a little cold water. The mixture is neutralised with sodium-carbonate until it gives a faint blue reaction with litmus paper. It must be filtered while hot, and is then poured into tubes (the mouths of which are closed with cotton-wool) and sterilised at 100° C. (the boiling point of water) for ½ to ¾ hours on three successive days. After sterilisation the medium may be poured into sterilised Petri-dishes, or left

in the tubes, as desired. When cold it forms a jelly suitable for the growth of the fungi.

In order to isolate the fungus, suitable portions of healthy root must be chosen. In the case of terrestrial Orchids, a portion cut from near the apex of any root is usually suitable. In the case of tropical epiphytes, however, where the distribution of the fungus in the roots is less general, only young roots should be selected. The selected piece of root is washed thoroughly to remove all traces of dirt, &c., and finally rinsed in distilled water. A clean surface is cut with a sterilised knife. Burgeff describes two methods of removing a sterile piece of root for inclusion in a culture. One is to take out a tiny cylinder of tissue by means of a specially prepared capillary glass tube, in the manner in which soil-borings are taken. The sterilised tube with its contents can be introduced into the prepared culture-tube, and the cylinder of tissue pushed down into the medium by means of a glass thread. In this way there is little risk of contamination. Another method is to cut longitudinal sections of the root with a sterilised knife, rejecting the outer surfaces, and place them in a drop of sterilised water on a clean object-glass. Examine quickly under the microscope to see if the fungus is present. If so, cut away carefully the outer epidermis, and transfer the sections to the prepared sterilised medium.

If successful, fungus hyphæ should appear in about two days, and in about eight to fourteen days some of the marginal hyphæ can be transferred to fresh culture tubes for making stock cultures.

It now remains to sow the seeds, which should be done under aseptic conditions. Everything being in readiness the seed capsule is opened and a number of seeds removed with a sterilised knife and placed on the nutrient jelly, the dish or table being immediately closed again. A little of the suitable fungus is added from a pure culture prepared as above described. The receptacles are then placed in a suitable position in the house to await events, and if all goes well the seeds will be observed to germinate, and young roots and leaves will develop in the ordinary way. When large enough, the seedlings may be transferred to pans of suitable compost, after which they should be treated precisely as other seedlings.

Two questions are invariably raised whenever this matter is discussed, one being whether it is necessary to make a special culture of the fungi? the other whether the nutrient medium could not be added to the compost beforehand, so as to encourage the growth of the necessary fungi, which are presumably always present in the roots of the parent plants? These questions were partly answered by M. Noel Bernard in an article in our own pages (*O.R.*, xiv. pp. 201-203, with fig.). Taking Odontoglossum, he admitted that some cultivators could get the seeds to germinate easily, but he attributed this to the presence of suitable fungi in the houses, for he

remarked I have always found fungi in the young seedlings which cultivators have sent me, as well as in the young seedlings of Orchids collected in their native homes.

And his photograph provides conclusive evidence on this point. One tube shown contains seeds of an Odontoglossum that had been sown aseptically on the surface of a mass of nutrient jelly. The seeds had been sown for a period of four months. They turned green and swelled slightly, but made no further progress; a perfectly familiar experience. The second tube contained seeds of the same plant, and had been treated in precisely the same way, except that the jelly had been inoculated for two and a half months with a fungus found on the roots of the Odontoglossum. This fungus had developed, forming a delicate network on the surface of the jelly, and this in turn had affected the seeds, which are shown developing in a regular manner.

It was necessary to use a fungus obtained from an Odontoglossum, for those obtained from Cattleya and Cypripedium produced no effect. Even that obtained from different Odontoglossums was variable, some bringing about germination more quickly than others, while some, though identical in appearance, had no appreciable effect. The cause of this variation is not apparent, unless more than a single species of fungus is concerned. Burgeff, indeed, seems to suggest that each species of Orchid has its own special fungus, but this we regard as highly improbable and against the weight of evidence. The subject, however, is still veiled in obscurity, and further experiments are necessary on this point. R.A.R.

The germination of Orchid seeds upon a fungus substratum, as demonstrated by Dr. Burgeff, was highly successful, seedlings of several different genera being raised in this way. The process was to prepare a gelatinous substance, of which Agar-agar was the base, and sterilize it by heat. A portion of the jelly was then placed in bottles of a similar type to those used for milk in the London district; the jelly was then innoculated with a pure culture of a fungus obtained from the root of the kind of Orchid which was being worked with, and the seeds were afterwards introduced. The bottles were then closed with a piece of parchment, and placed in a suitable temperature. These operations were conducted by Dr. Burgeff himself, and, as he says, the pure culture of the root fungus penetrates into the germ of the seed (which is devoid of endosperm), and *provokes* germination, thus supplying the young seedlings with the necessary nourishment. Under these conditions germination proceeds regularly, and the seedlings remained in the bottles until they became fit for a different compost. The bottles were then broken and the plants removed. The greatest difficulty experienced by Dr. Burgeff was to find a gardener who was able to continue

to grow these diverse seedlings well after germination, and ultimately a young man was brought over from England for the purpose.

There is another place, the name of which I have forgotten, where Dr. Burgeff's experiments are being followed up, and I heard that in 1913 they had already experienced considerable success. Patience and devotion at given opportunities will no doubt help in developing a practical side to these promising experiments.

A. BEER.

ORCHIDS FROM NEWCHURCH.

A BEAUTIFUL series of Odontoglossums and Odontiodas has been sent from the collection of Richard Ashworth, Esq., Ashlands, Newchurch, President of the Manchester & North of England Orchid Society (gr. Mr, S. Davenport), all of them, it is remarked, being Lancashire-grown flowers, not bought from the South of England. An Odontoglossum crispum of the Bonnyanum type is of excellent shape, and has broad, clear white segments, with a large red-brown blotch above the middle of each sepal and on the front of the lip, the petals being unspotted. O. eximium purpuratum is of good shape, heavily blotched with purple on all the segments—those on the petals taking the form of a broad zone—with a number of purple splashes on the white ground. Three forms of O. Cervantesii show some of the variation to which this species is subject. O. c. decorum is a fine form with comparatively few markings on the lip, and O. c. punctatum has the zone of markings rather closely arranged on the lower part of the segments, with rather small markings on the margin and disc of the lip. A third has the lip rather deeply lobed, with large purple blotches, those on the disc being arranged in broad zones. It might be called O. c. ashlandense. The four Odontiodas are brilliantly-coloured forms. O. Rouge-Dragon is one of the chelseiensis type, possibly a variety of it, having light purple sepals and petals, with some light markings at the margin and apex, and a well-spotted lip, with a white apex and some orange-yellow on the disc. The spike bore fifteen flowers. O. Queen Mary, from a spike of twenty flowers, has very deep red segments, margined and tipped with yellow, and the apex of the lip clear yellow. O. Schrœderi, from a spike of twenty flowers, is dark scarlet, with yellow markings, chiefly arranged in a zone within the margin of the segments, the lip being deep yellow with some red markings round the crest. Lastly, O. luminosa (Odm. Rossii rubescens × Oda. Charlesworthii) is a very distinct flower, with dark crimson-brown sepals and petals, recalling those of the Odontioda parent, and an ovate, purple lip, with two yellow blotches on either side of the 4-lobed crimson crest. It forms a very interesting series.

CYMBIDIUM I'ANSONII.

WHEN the original plant of Cymbidium I'Ansonii flowered in the establishment of Messrs. Hugh Low & Co., nearly eighteen years ago, out of an importation of C. Lowianum said to have been received from Upper Burma, it was suggested that it was a natural hybrid between C. Lowianum and C. Tracyanum, and the desirability of testing the matter by experiment was pointed out (*O.R.* viii. pp. 191, 209, fig. 18). The

Fig. 3. CYMBIDIUMI'ANSONII.

plant had received an Award of Merit from the R.H.S. at the recent Temple Show. The opinion has not stood the test of experiment, and attention has again been called to the matter. It now seems probable that it is a distinct species, whose habitat is still imperfectly known, as was the case with C. Tracyanum itself until Dr. Alexander Kerr met with it in quantity in the Chengmai district of Siam (*O.R.*, xix. pp. 39, 40). C. I'Ansonii was long known by the single unique plant, which passed into the collection of Sir Frederick Wigan, Bart., but a few others have since

appeared in a rather mysterious way. The first that we have any record of was the C. Mandaianum that was exhibited by Mr. W. A. Manda, of St. Albans, at the Royal International Horticultural Exhibition in May, 1912, and which received the first prize for a new Orchid, but which we were unable to distinguish from C. I'Ansonii (*O.R.*, xx. p. 167). In the following April, Messrs. Sander & Sons exhibited a plant of C. I'Ansonii which is said to have been imported from Annam (xxi. p. 156); while in April, 1914, Messrs. W. B. Hartland & Sons, Cork, exhibited a plant of C. Mandaianum which we remarked (xxii. p. 132) quite confirmed the view expressed two years earlier that it is a form of the rare C. I'Ansonii. On the latter occasion a hybrid raised from C. Tracyanum × Lowianum was also exhibited, which was quite distinct, and we remarked of C. I'Ansonii, "it may be that its rarity and the fact that it appeared with C. Lowianum has been misleading." Other evidence derived from hybridity is equally emphatic. In December, 1906, Mr. J. W. Moore, Rawdon, Leeds, exhibited a hybrid from C. Lowianum × Tracyanum, under the name of C. Cravenianum (*O.R.*, xv. p. 20), and in January, 1908, an Award of Merit was given to C. gattonense, derived from the same parentage in the collection of Sir Jeremiah Colman, Bart. (xvi. p. 71). A few months later we saw, in the collection of Lt.-Col. Sir G. L. Holford, a seedling from the same parentage, which was pushing up two spikes (p. 326), and in November following another seedling was exhibited from the collection of W. Bolton, Esq. (p. 370). None of them have produced C. I'Ansonii, and no other combination would account for its characters, so we must conclude that it is a natural species, and await information as to its habitat. Should there be other plants of independent origin we hope to hear of them; subdivisions of the original one—and there are some—of course do not count.

R.A.R.

ORCHIDS IN FLORIDA.

THERE is probably a great future for Orchids in extreme South Florida. After the disastrous freeze of last February, which almost destroyed orange groves here (lat. 28° 30′), I visited my friend Mr. Charles Simpson, who for fourteen years has been transforming a fifteen-acre tract of native forest and shrubs into a botanical paradise, without losing any of its original interest and beauty. This garden is at Little River (lat. 25° 45′), on the east coast of Florida, and while it did not escape the frost altogether, cocoanut palms being defoliated and some tender species killed, all the Orchids naturalised in the forest escaped injury—Cattleyas, Epidendrums, Dendrobiums, &c.—and I was particularly impressed by a luxuriant clump

of Phalænopsis Schilleriana and P. amabilis with far-spreading roots on an almost bare tree trunk, entirely unhurt by the cold.

About forty miles further south is the Royal Palm Park on Paradise Key, presented by the State of Florida and cared for by the State Federation of Women's Clubs. Paradise Key is not an island, as might be inferred from its name, but a tract of elevated land of about a thousand acres in a great flat prairie, nearly at sea level, and overgrown with a most varied flora, which those who know say will compare with any beauty spot in the West Indies or tropical South America. The Curator tells me that no Orchid, native or foreign, has so far been known to be hurt there, and I have left my few thousand remaining hybrids, when I no longer have use for them, to be naturalised on the trees there. The plan is to retain all the natural features, but to add everything beautiful that may be able to make itself at home in the environment. The relative difference in distance and climate between this part of Florida and that is the difference between Yorkshire and South Devon in England.

T. L. MEAD.

Oviedo, Florida.

ORCHIDS IN SEASON.

A FLOWER of the brilliant Sophrocattleya Poppæa (S. grandiflora × C. Empress-Frederick), is sent by R. G. Thwaites, Esq., in whose collection at Streatham it was raised. The flower is fairly intermediate in character, the segments being broad and well-shaped, and the colour deep crimson-rose, with some yellow in the throat.

An example of the charming Cypripedium Venus var. Boltonii (niveum × insigne Sanderæ) comes from the collection of William Bolton, Esq., Wilderspool, Warrington. It is most like a much enlarged C. niveum in shape, and has a few minute purple dots on the dorsal sepal and petals.

The first flower of a seedling Cypripedium is sent from the collection of Mrs. E. J. Thatcher, The Manor House, Chew Magna, Somerset. The parentage is unfortunately unknown, as it was purchased at a sale, without record. It has the general character of C. Leeanum, of which we think it is a variety. The seedling is said to be vigorous, and is producing another flower.

A curious flower of Cattleya Trianæ is sent by Messrs. Sanders, St. Albans, in which the lip is broken up into three, all the other parts being normal. The two lateral divisions of the lip represent the petaloid stamens of the outer staminal whorl, while the central one is the median petal. The divisions have the usual coloration, and thus we have a lip resolved into its constituent parts, an unusual and interesting occurrence.

CALENDAR OF OPERATIONS FOR FEBRUARY.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

THE treatment given last month relating to temperatures, watering, atmospheric moisture, ventilation, and the general management of the plants for this month will differ but little from that advised previously. The lengthening days, with the increasing amount of light and sunshine, and the consequent increase of temperature in the houses during the middle hours of the day, will be of great benefit to the plants. With the increased heat slightly more moisture in the atmosphere may be used, but as we are not through the winter months, it is advisable to keep everything as far as possible in a resting condition. At all seasons, and under all conditions, the balance of heat, light, and moisture must be maintained, if the plants are to be kept in a robust and healthy state.

POTTING.—With the present month the year's work in this respect practically begins, and if this is neglected trouble is sure to accrue. It is much the best practice to repot any plant before the compost become sour and decomposed, as it is much easier to keep a robust plant growing vigorously than to nurse a rootless plant into a healthy condition. In any collection there is always some plants that require special attention, and these are best placed by themselves, and elevated well up to the light, where they may receive close attention. There is at the present time some difficulty in obtaining suitable fibres to make up our composts, so that those plants that are in good material may be safely left over to a future time, when we hope labour and material will be more abundant. AT and peat fibre are the only materials available, and if properly cleaned and made porous will grow Orchids satisfactorily.

DENDROBIUMS of the deciduous section are now coming on quickly, and these will make a great display for some time to come. Where good growth was obtained last year, and afterwards properly ripened, the flower buds will push readily. On no account force them forward too quickly, if fine flowers are required, as the majority of late winter and spring flowering varieties develop much better and finer if brought along slowly in a temperature of about 60°, giving sufficient water at the roots and in the atmosphere to keep the stems plump. The additional light and sun heat is a great aid in the development of the flowers of this large genus. It is as yet early to attempt much repotting, but any seedlings or other plants which have started into growth may be done, and under existing conditions I recommend a compost of equal portions of AT fibre and sphagnum moss, thoroughly cleaned.

CYPRIPEDIUMS of the insigne section, also the many hybrids which

produce their flowers at the same season, and have now passed out of bloom, may receive attention as regards repotting, should it be necessary. A suitable compost consists of equal parts of peat fibre, AI fibre, and sphagnum moss, with some clean loam fibre added. The pots must be well drained, and the new material kept on the dry side until the new roots have entered the material freely. These plants can be taken in hand as soon as their flowers are cut or faded, and after repotting they may be thoroughly cleaned and placed in their growing quarters, where, under proper conditions, they should thrive until their flowers appear in the autumn.

CATTLEYAS AND ALLIED PLANTS.—These at the present time comprise so many plants and of such diverse parentage, all of which succeed under practically the same conditions, that for cultural purposes they may be placed together. Like the species, they have an individuality of their own, some producing thick fleshy roots and others thin ones, and these matters all affect their treatment. Whilst the strong-rooting varieties may be placed in large receptacles, in comparison with the size of the plants, the feeble or small-rooting varieties must be placed in small ones. Those plants which produced flowers during the late autumn and winter months may be repotted as soon as new roots are observed to be pushing from the base of the last-made pseudobulb. A clean open material, made up of either peat fibre or AI fibre, answers their requirements, and the plants should be potted firmly. Cattleya Trianæ, and others which are now in bloom, may be treated in precisely the same manner when their flowering period has passed. In the cultivation of this large genus I should like to put forward a word of caution against the continual change of material used as a rooting medium. Because some individual grows a plant exceedingly well in some particular compost, it is not bound to be a success in every case. I have seen much harm done by placing these plants first say in leaves and then in another material. Drastic changes are not desirable, except in exceptional cases, and experiments should be made on a limited number of plants at a time. The chief items in the cultivation of these plants are an even temperature, a sweet atmosphere, a clean rooting medium, water when growing whenever they become dry at the roots, and whilst at rest only sufficient to keep them plump and healthy. Cleanliness is one of the greatest aids to good cultivation, and as proof we may mention how soon a plant infested with scale recuperates after it has been removed.

MEXICAN LÆLIAS which have passed out of flower, and are about to push new roots, may now be repotted, should it be necessary. The same material may be used for these plants as recommended for Cattleyas.

VANDAS, AËRIDES, AND SACCOLABIUMS.—Any plants of these Old World Orchids, which are showing signs of renewed root action, may have attention as regards repotting or resurfacing. I do not advocate resurfacing plants

as a rule, but in dealing with these plants when repotting there is danger of many of their thick, fleshy roots being broken when turning them out of their receptacles, hence the necessity of resurfacing. In the case of well-rooted healthy specimens it is desirable to renew the compost on the surface after the long resting season. Care should be taken that the drainage is perfect. Plants that become leggy through the loss of their lower leaves should be reduced by cutting away a portion of the stem. This shortening must be governed by the condition of the roots, for it is not desirable to remove them all. The growths should be securely fastened to stout stakes. A suitable compost consists of clean crocks, broken fine, and live sphagnum moss, pressed moderately firm. The majority of these plants do best grown in the warmest house, standing on a damp bottom. Vanda tricolor, V. suavis, Aërides crispum, A. crassifolium, and A. Warneri do better in a warm intermediate temperature.

MILTONIAS of the vexillaria section will have filled their pans with roots, and are making rapid growth. They will now take up an abundance of water, and should not be allowed to suffer for want of it, either at the root or in the atmosphere. The autumn-flowering varieties, such as M. v. Leopoldii, superba, and others may now be repotted. A mixture of equal portions of peat, AI fibre, sphagnum moss, and some broken leaves will answer their requirements. They should be continually watched at this season for attacks of thrip, and other insect pests, as it is not always possible to keep the atmosphere at this season to their liking, and these attacks often occur after a spell of cold weather, when an unusual amount of fireheat is necessary to maintain the temperatures. Dipping the plants in a solution of Quassia extract is a safe and sure remedy.

ONCIDIUMS thrive in a similar compost to Miltonias, and as they resent a sour compost, any that are in need of new material may have attention. The smaller kinds are best grown in shallow pans, suspended from the roof, whilst the larger strong growers are more easily accommodated on the stages. Most Oncidiums enjoy the temperature of the Intermediate house, but such species as O. Papilio, Kramerianum, Lanceanum, guttatum, and Cavendishianum do best in the Warm house. There is a likelihood of many of these plants becoming rare in our collections, owing to none being now imported.

MASDEVALLIAS.—At this season there are many species and hybrids of these interesting plants starting into growth, and they may have attention as regards repotting. I am a firm believer in the annual repotting of most plants, but I am afraid that owing to circumstances many of us will not be able to follow that out at the present time. The curious M. Chimæra section may also have attention, but these in every case must be grown in baskets, as their flowers are produced in a downward direction. The whole

of these plants succeed in a similar compost to that used for Oncidiums, which, with the exception of the M. Chimæra group, succeed in the Cool house, whilst that species requires the temperature of the Intermediate house during the winter months, removing them to the Cool house during the warmer months of the year.

ODONTOGLOSSUMS, ODONTIODAS, and similar plants, which succeed in the Cool house, and now have made considerable growth, may also have attention, should they be in need of new rooting material. Plants that are now pushing up their flower spikes should be carefully watched for slugs and other pests, which at this season do much damage. O. grande and allied species which are at rest now require little water, only sufficient is necessary to prevent them from shrivelling until growth commences.

CYMBIDIUMS, both species and hybrids, should now have attention at the roots, as soon as their flowers are over, should they be in need of it. As they resent root disturbance, this operation should only be performed when the compost becomes exhausted. A compost in which fibrous loam is the main constituent answers their requirements; but care in the application of water to the roots of newly-potted plants is necessary.

OBITUARY.

A. J. OAKSHOTT.—We much regret to hear of the death of Mr. A. J. Oakshott, Bidston, Cheshire, which is announced in the report of the Manchester Orchid Society for November 15th last. Mr. Oakshott was an old and enthusiastic Orchidist, and has been a subscriber to the *Orchid Review* for the last ten years.

JOHN LEEMAN.—Another old and enthusiastic Orchidist has passed away in the person of Mr. John Leeman, West Bank House, Heaton Mersey, who died at his residence on January 14th last, in his 75th year. Mr. Leeman has been for many years the possessor of one of the finest collections of Orchids in the Midlands, and especially of choice Odontoglossums and Cattleyas, white varieties of the latter being special favourites. Formerly he was an occasional exhibitor in London, but of late years has been an active supporter of the Manchester Orchid Society, of which he was one of the original founders. Accounts of his collection may be found in our pages (viii. pp. 137-8; xiv. p. 166; and xvii. pp. 274-6).

F. MENTEITH OGILVIE.—Another sad loss to Orchidology has to be recorded in the death of Mr. F. M. Ogilvie, The Shrubbery, Oxford, who passed away after a brief illness from pleurisy and pneumonia. Mr. Ogilvie has been an enthusiastic Orchidist for a good many years, and his collection, under the charge of Mr. W. Balmforth, has been famous for quality and high culture.

BRASSAVOLA CUCULLATA.

BRASSAVOLA cucullata is a remarkable Central American Orchid, which was originally introduced from the West Indies by Rear-Admiral William Bligh, in 1793, and flowered for the first time in this country in the bark stove of Edward Woodford, Esq., of Vauxhall, in September, 1801. It was then figured as Epidendrum cucullatum, Sims

Fig. 4. BRASSAVOLA CUCULLATA.

(*Bot. Mag.*, t. 543), but some years later was separated by Robert Brown under the name of Brassavola cucullata (*Hit. Hort. Kew.*, ed. 2, v. p. 216), thus becoming the type of the new genus. It has since been found in Mexico, British Honduras, and Venezuela. The character of the flower is well shown in the annexed figure, which is reproduced from a photograph sent by the late Frau Ida Brandt, of Zurich. The plant is of pendulous

habit, and has slender terete leaves, while the flowers are white, and all the segments extended as long acuminate tails, the lip alone being dilated at the base into a cordate, fringed limb, which gives the flower a very striking appearance. The ovary and the lower part of the pedicel are not included in the picture, but the mature capsule is equally remarkable, being short, and crowned with a beak some five inches long, several times as long as itself. It is a remarkable species, but not likely to be of any service for hybridisation purposes. The species succeeds well if grown on a block, with a little compost attached, and suspended from the roof of the Cattleya house. It should be watered liberally during the growing season.—R.A.R.

SOCIETIES.

ROYAL HORTICULTURAL.

THE opening meeting of the year was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on January 15th, and brought together a good display of Orchids, including five medal groups, while two Awards of Merit and two Preliminary Commendations were given. Other classes of exhibits were few in number.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), W. Bolton, Arthur Dye, Walter Cobb, J. E. Shill, J. Cypher, F. J. Hanbury, J. Charlesworth, A. McBean, C. H. Curtis, T. Armstrong, F. K. Sander, Pantia Ralli, R. G. Thwaites, J. Wilson Potter, C. J. Lucas, and R. A. Rolfe.

AWARDS OF MERIT.

CYPRIPEDIUM MATTHEWSIANUM USK PRIORY VAR. (Thalia × Mrs. Francis Wellesley × Hera Euryades).—A large and handsome form, approaching the former parent in shape, and having a broad white dorsal sepal with emerald green base, and lines of more or less confluent purple spots, and the broad petals and lip chestnut-red, with pale yellow margin. **Exhibited by R. Windsor Rickards, Esq.**

LÆLIOCATTLEYA ŒNIUS BRYNDIR VAR. (Lc. Coronis × C. Enid).—An exceptionally handsome variety, having broad, recurved sepals and petals, apricot yellow in colour shaded with rose, and a purple-crimson, undulate lip, with some yellow lines at the base. Exhibited by Dr. Miguel Lacroze.

PRELIMINARY COMMENDATIONS.

ODONTOGLOSSUM APOLLO (Armstrongiæ × Queen Mary).—A very promising seedling, having a nearly circular shape, and the sepals and petals heavily blotched and marked with reddish-purple on a white ground. **Exhibited by Messrs. Armstrong & Brown.**

ODONTOGLOSSUM PEERLESS ORCHIDHURST VAR. (Ossulstonii × eximium).—Another fine seedling, bearing its first flower, which is of

excellent shape, and dark claret-purple, with white margin, and a zone of colour outside the large central blotch on the petals. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

The Duke of Marlborough, Blenheim, Woodstock (Orchid-grower, Mr. J. Smith), exhibited Cypripedium Curtingo (Curtisii × Flamingo), a well-coloured flower, having the dorsal sepal purple with a broad white margin, and C. Lee-Curtisii (Leeanum × Curtisii), combining well the characters of both parents.

Walter Cobb, Esq., Normanhurst, Rusper, showed a plant of Miltonia Phalænopsis Cobb's var., bearing four brightly-coloured flowers.

Dr. Miguel Lacroze, Bryndir, Roehampton (Orchid-grower Miss Robertson), showed Odontioda Madeline Bryndir var., a fine thing, heavily blotched with Indian red on a pale yellow ground.

R. Windsor Rickards, Esq., Usk Priory, Monmouthshire, sent Cypripedium Eurybiades Mirium, a finely-shaped flower with large purple spots on the dorsal sepal, and C. Commodore (memoria Jerninghamiæ × Alcibiades illustre), a very fine flower of the Leeanum type, and having a very broad concave dorsal sepal, with emerald green base. Both the plants, as well as the one certificated, were very finely grown.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Flora Medal for a fine group, including about a dozen promising Odontoglossum seedlings bearing their first flower, Cypripedium Cupid, C. Euryades New Hall Hey var., and other Cypripediums, Læliocattleya Alma (Lc. Ernestii × C. Dowiana aurea), having deep yellow sepals and petals and a ruby purple lip, with some yellow veining in the throat, the pretty little Cirrhopetalum Micholitzii, a few good Cymbidiums, and other hybrids.

Messrs. Charlesworth & Co., Haywards Heath, also received a Silver Flora Medal for a fine group, containing a number of good Odontiodas and Odontoglossums, the latter including the beautiful Odontoglossum crispum xanthotes and O. eximium President Poincaré, a round, well-blotched flower, Cattleya Enid alba, Cypripedium viridissimum, a fine yellow-green hybrid, C. Isonzo (Alcibiades × Mrs. Wm. Mostyn), a richly-coloured hybrid, a few good Læliocattleyas, and another plant of the batch of Eulophiella Rolfei, richer in colour than the one exhibited last year.

Messrs. J. Cypher & Sons, Cheltenham, received a Silver Banksian Medal for a good group, including examples of Epidendrum ciliare, Calanthe Harrisii, Lælia anceps Sanderiana, and a few choice Cypripediums in well-grown examples, those noted including a fine C. Rossetti, C. Thompsonii, and the charming white C. Boltonii and C. Dowlingianum, the latter with some purple markings on the dorsal sepal.

Messrs. Hassall & Co., Southgate, received a Silver Banksian Medal for

a good group, including examples of Brassocattleya Veitchii Queen Alexandra, Læliocattleya Buenos-Aires, and St.-Gothard, Cymbidium Alexanderi and Capella, Cypripedium Thalia Mrs. F. Wellesley, C. Thompsonii, Cattleya Dusseldorfii Undine and others.

Messrs. J. & A. McBean, Cooksbridge, also received a Silver Banksian Medal for a good group, including the beautiful Cymbidium Schlegelii roseum and several others, Lælia anceps Schrœderæ, good examples of Odontoglossum triumphosum and armainvillierense, Brassocattleya Atys (B. nodosa × C. Iris), most like the former in shape, with purple segments, and numerous purple blotches on the lip, several beautiful Odontiodas and other showy Orchids.

Messrs. Flory & Black, Slough, showed Odontoglossum crispum Rajah, with large black-purple blotches on the segments, O. La Seine, having claret-red flowers margined with blush, Cattleya Œnone alba (labiata alba × Mossiæ Wageneri) and one or two others.

Messrs. Sanders, St. Albans, sent Cymbidium Albatross (Gottianum × grandiflorum), cream white with reddish-rose markings on the lip.

At the meeting held on January 29th Orchids were again well represented, and the awards consisted of two First-class Certificates, a Preliminary Commendation, and three medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, W. Bolton, W. H. White, J. E. Shill, R. Brooman White, W. H. Hatcher, R. G. Thwaites, J. Charlesworth, R. A. Rolfe, Pantia Ralli, J. Wilson Potter, F. K. Sander, E. R. Ashton, and T. Armstrong.

FIRST-CLASS CERTIFICATES.

CATTLEYA MONARCH BRYNDIR VAR. (Trianæ × Empress-Frederick).—A very beautiful form, having blush-rose sepals and petals, the latter very broad and crimped, and a rich, ruby-purple lip, with a light yellow blotch on each side of the throat and some yellow lines below. Exhibited by Dr. Miguel Lacroze.

CYPRIPEDIUM EURYBIADES THE BARONESS (Alcibiades × Hera Euryades).—A remarkably fine flower, having a circular dorsal sepal, white above and greenish yellow below, copiously blotched with claret-purple, the petals honey-yellow with brown markings below, and the lip mahogany red in front. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

PRELIMINARY COMMENDATION.

ODONTOGLOSSUM GATTON-PRINCESS (Queen of Gatton × eximium).—A very promising seedling, bearing a nearly circular flower of good substance, and almost covered with ruby-claret blotches, with traces of white markings and a narrow white margin. Exhibited by Sir Jeremiah Colman, Bart.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), showed flowers of the fine Cypripedium insigne Gatton Park var., and a seedling obtained by crossing two of the finest forms of Odontioda Bradshawiæ, which showed a decided reversion to a coloured Odontoglossum in shape and texture. It is undeveloped at present, and it will be interesting to see what other seedlings are like.

Dr. Miguel Lacroze, Bryndir, Roehampton (Orchid grower Miss Robertson), sent Brassocattleya Bianca majestica, a pretty blush pink form, and Sophrocatiælia Isabella (Scl. Marathon × C. Fabia), with bright carmine-rose flowers.

Col. Leith, Grey Court, Riding-Mill-on-Tyne (gr. Mr. J. Renwick), showed Odontoglossum Colonel-Leith (Rossii × Uroskinneri), a very pretty hybrid, showing well the character of both parents. The sepals and petals are rosy lilac, densely blotched with chocolate-red, and the ample lip pale lilac with a whitish crest.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Flora Medal for a fine group, including some good Cattleyas, Cypripediums, Odontiodas, and Odontoglossums, noteworthy among them being O. Fabia splendens, O. Antiope, O. Corona (eximium × Menier St. Vincent), claret red margined with white, and O. Orissa (armainvillierense × Hylandianum). We also noted Sophrocattleya Niobe (Sc. Saxa × C. Octave-Doin), a pretty rose-coloured hybrid with some yellow in the throat of the lip, and the front lobe ruby-red, Epidendrum polybulbon album, Lælia Gwennie, and others.

Messrs. Charlesworth & Co., Haywards Heath, also received a Silver Flora Medal for a fine group, in which Odontoglossums, Odontiodas, and Cypripediums were conspicuous, with the charming Vanda cœrulea alba, Brassocatlælia Truffautiana, and others. Noteworthy objects were Odontioda Thwaitesii and O. Joan var. pulcherrima, the latter brilliant scarlet, Odontoglossum crispum xanthotes, O. Lawrenceanum var. Cobbianum, Cypripedium Isonzo (Alcibiades × Mrs. Wm. Mostyn), C. Helen II. Westonbirt var., and the whole group was very effective.

Messrs. Hassall & Co., Southgate, received a Silver Banksian Medal for a good group, consisting largely of Cymbidiums, noteworthy among them being examples of C. Alexanderi, Capella, Sybil, and Moira (Tracyanum × Pauwelsii), a brilliant Odontioda Zephyr, Odontoglossum armainvillierense, a very fine form of O. crispum, and O. Sybil (Thompsonianum × Aireworth), a dark claret-hybrid, with lilac tips to the segments and a dark yellow crest.

Messrs. Sanders, St. Albans, sent a few good Orchids, including Cymbidium Albatross, Brassocattleya Fascinator (Bc. Maronii × C. Enid), Odontioda Diana, Cypripedium Hindeanum, and Saccolabium bellinum.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on January 3rd, 1918, when the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, J. Howes, A. J Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (Sec.).

FIRST-CLASS CERTIFICATES.

Cypripedium Perseus, a well-shaped flower, with a round white dorsal sepal, three inches broad, heavily spotted with crimson, and broad, mahogany red petals and lip, and C. Perseus var. Beta, the dorsal almost solid crimson, with white margin, and the petals and lip honey yellow, veined with crimson; from W. R. Lee, Esq.

Cypripedium Christopher var. Grand Duke Nicholas (Miss Camm × Leeanum Corona), a huge flower, of perfect shape, the dorsal sepal four inches across, porcelain white, with green base and numerous bright spots, and the lip and petals (1½ inches across) of greenish brown—the finest flower yet seen in the north of England; from S. Gratrix, Esq. A Gold Medal was also awarded to this brilliant acquisition.

AWARDS OF MERIT.

Cypripedium Pyramus West Point var., and C. Sir H. Rawlinson (Actæus langleyense × memoria Jerminghamiæ); from S. Gratrix, Esq.

Cypripedium Glorita (Actæus langleyense × Golden Glory) and C. Golden Dawn (Golden Gem × Sanacderæ); from T. Worsley, Esq.

Odontoglossum eximium Perfection (crispum Perfection × armainvillierense); from Dr. Craven Moore.

Cypripedium Bectoniæ; from John Hartley, Esq.

CULTURAL CERTIFICATE.

To Mr. C. Branch for Odontoglossum Valerie, with a branched spike carrying 46 flowers, and O. Rouge-Dragon.

FIRST-CLASS AWARD OF APPRECIATION.

Cypripedium Golden Morn (San-Actæus × Mrs. F. Sander); from S. Gratrix, Esq.

W. R. Lee, Esq., Heywood (gr. Mr. Branch), was awarded a Large Silver Medal for a group, composed principally of choice Cypripediums, and including C. Perseus var. Alpha, C. Royal George, Corsair, Alcibiades illustre, Alport Cæsar, and Alpha, with Oncidioda Cooksoniæ, and others.

The Exors. of O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers) staged a group of choice Cypripediums, including C. Eve, Venus, Mrs. F. Sander, Mrs. Cary Batten, Mrs. W. G. Groves, Hermes, Holdenii, Dreadnought, Queen Alexandra, Gertrude Hollington, Troilus Cravenianum, Leeanum Gratrixiæ, and others.

Messrs. J. Cypher & Sons, Cheltenham, were awarded a Silver Medal

for a fine group of Cypripediums, including Christopher, Vandyke, bourtonense, Earl Tankerville, San Actæus, Prince John, Leeanum vars. Corona and magnificum, Euryades vars. splendens and superbum, Calanthe Harrisii, and others.

Messrs. Sanders, St. Albans, staged Cypripedium Pyramus, tenebrosum, General Diaz, Princess Patricia, C. Hera × chrysotoxum, with Cattleya Evelyn and C. Maggie-Raphael.

Exhibits staged by the following are included in the above list of awards: S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); T. Worsley, Esq., Haslingden (gr. Mr. T. Wood); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran), and John Hartley, Esq., Morley (gr. Mr. Coupe).

N.B.—The Cattleya Helen-Langley The Knowle var., which received a First-class Certificate on December 6th, ought to read (p. 20), sepals, petals, and lip white, with citron yellow markings in the throat.

At the meeting held on January 17th the exhibits were not as numerous as usual, owing to the inclemency of the weather. The members of Committee present were: R. Ashworth, Esq. (in the chair), Messrs. J. Evans, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATE.

Cypripedium Garland var. Lady Northbourne (Hera × Lord Wolmer), a compact, round flower, having a white dorsal, with apple green base, and heavily blotched with purple brown; very broad, green petals, blotched and veined with reddish brown, and a reddish brown lip; from the Hon. Robert James.

AWARDS OF MERIT.

Cypripedium Lord Wolmer var. Duke of Marlborough (Euryades × Leeanum); from the Hon. Robert James.

Cypripedium Diadem var. Lady Beatty; from S. Gratrix, Esq.

FIRST-CLASS AWARD OF APPRECIATION.

Odontioda Alcantara (Oda. Cooksoniæ and Odm. eximium); from Col. Sir J. Rutherford, Bart., M.P.

CULTURAL CERTIFICATE.

To Mr. J. Lupton, for Cypripedium Alcibiades Beardwood var.

The Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers), were awarded a Special Vote of Thanks for a small group, including Odontoglossum crispum Jasper and O. c. Raymond Crawshay; Cypripediums keighleyense, Boltonii, Archie Neill, Tankervilleæ, and Mrs. Cary Batten; Lycaste Tunstillii and L. Skinneri Casador, and Cymbidium rosefieldiense.

Messrs. Keeling & Sons, Bradford, staged Cypripedium Sunset, keighleyense, Bectoniæ, Eurybiades, and Overtonii.

Exhibits from the Hon. Robert James, Richmond, Yorks (gr. Mr. J. Benstead); Col. Sir J. Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), and S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), are included in the above list of Awards.

The Secretary regrets to report the death of John Leeman, Esq., of Heaton Mersey, one of the founders of the Society, and a most enthusiastic member and exhibitor for a number of years.

ORCHID NOTES AND NEWS.

TWO meetings of the Royal Horticultural Society will be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, during February, on the 12th and 26th, when the Orchid Committee will meet at the usual hour, 11.45 a.m. The following meeting is fixed for March 12th.

The Manchester and North of England Orchid Society will hold meetings at the Coal Exchange, Manchester, on February 7th and 21st. The Committee meets at noon, and the exhibits are open to inspection of members and the public from 1 to 4 o'clock p.m. The following meeting is fixed for March 7th.

At the meeting of the R.H.S. Orchid Committee held on January 26th, the Chairman, Sir Jeremiah Colman, Bart., referred in suitable terms to the loss that the Committee, and Orchidolgy in general, had sustained in the death of Mr. F. M. Ogilvie, The Shrubbery, Oxford, and moved a vote of condolence with his widow. He then remarked that he had a pleasant reference to make :—

The *Orchid Review*, which gives so complete a historical account of all that concerns the world of Orchidology, has reached its twenty-fifth anniversary, and I am sure you will join me in hearty congratulations to the Editor, Mr. R. A. Rolfe– whom we are pleased to have with us on this auspicious occasion—upon the success from the Orchidists' point of view of the *Review* upon which he has so assiduously laboured. Probably he alone knows the amount of labour entailed. He took the work up when we were left in confusion as the result of the extraordinary conditions of Reichenbach's Will, and we owe him our acknowledgment and appreciation. We trust that he may be able to continue the high standard of this essential and interesting journal in spite of the troublous times through which we are passing. I should like to say one word in respect to the

general Index, which I understand is well in hand. I hope that Mr. Rolfe will pursue his intentions to completion, as the value of the *Review* will be greatly enhanced by having an easy means of reference, although I must confess that probably the pages will be turned over less frequently, and it is no unusual thing for me in endeavouring to make a reference to come across matters of so much interest that I cannot help delaying to read them, and I have no doubt that others do the same. On behalf of the Committee I offer Mr. Rolfe our thanks and congratulations.

Mr. Rolfe briefly thanked the Committee, and admitted that the *Review* had been a greater tax upon his leisure time than he could possibly have foreseen. Considerable progress had been made with the Index, and he hoped to be able to complete it for publication after the War. At present everything was out of course.

CYMBIDIUM VIRGO.—A flower of a new hybrid from Cymbidium Woodhamsianum × Pauwelsii is sent from the collection of G. Hamilton-Smith, Esq., Northside, Leigh Woods, Bristol, by Mr. W. Walker. It is most like the former in general character, and has light green sepals and petals, with slightly darker nerves, and the well-formed lip is yellow, with a broad crimson band round the front lobe, a narrow line of the same down the centre of the disc, and a light yellow margin.

A flower of an attractive Odontoglossum, which was exhibited at the R.H.S. meeting held on January 29th under the name of O. Colonel-Leith, is sent from the collection of Col. Leith, Riding-Mill-on-Tyne (gr. Mr. J. Renwick). It is a hybrid from O. Rossii × Uroskinneri, and most resembles the former in habit. The flowers are rosy lilac, densely blotched with red on the sepals, and the crest of the lip whitish.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

E.F.C.—The flower is rather Lælia anceps var. Williamsii. It is very near var. Sanderiana, but differs in the absence of a purple blotch from the front of the lip. The other matter shall have due attention.

W.W.B.—Many thanks. The note is unavoidably postponed, with several other matters.

G.H.S.—The flowers are very interesting, and will be dealt with as early as possible.

F.D.—The case is particularly interesting, but are you quite sure of the absence of fungi from the roots?

We have again to acknowledge the receipt of several complimentary letters, which are being suitably dealt with.

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VOL. XXVI. MARCH, 1918. No. 303.

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVI. MARCH, 1918. NO. 303.

NOTES FROM KEW.—III.

A CURIOUS experiment is in progress at Kew which is being watched with much interest. It arose as an attempt to find a potting material that was not subject to quick decay, with the accompanying loss of roots, and has thus been described by the Curator (*Gard. Chron.*, 1918, i. p. 51):—

"About three years ago half-a-dozen small plants were potted in ordinary sponge to test it as a substitute for peat fibre. Sponge, being clean and lasting, possesses in its other properties, so it was thought, exactly what epiphytic Orchids require. The result is interesting, the plants, having rooted freely in and about the sponge, the roots and leaves being quite healthy. Although the same sponge has been in use over three years, it is still tough and porous. The experiment is being repeated on a larger scale with Cattleyas, Dendrobiums, Vandas, Phalænopsis, Bulbophyllums, Stanhopeas, Odontoglossums, and Oncidiums. Sponge "trimmings" can be purchased at a reasonable price compared with the present price of osmunda fibre. Besides osmunda and all fern roots in use for the purpose break down too quickly, and are then mischievous."

It is suggested that "a plant pathologist in quest of a promising subject for research might give his attention to the behaviour of Orchid roots. Every experienced Orchid-grower has been troubled by the death of the roots of Cattleyas, Odontoglossums, Dendrobiums, and others, from no evident cause. It does not appear to be due to excess of moisture during the resting season, nor to drought. Since I have been connected with Kew, Odontoglossums have lost practically every root during the winter, even although the plants had filled their pots in summer with roots like a ball of twine. And it is the same to a large extent with Cattleyas. The annual loss of roots is accompanied by considerable shrinking of the pseudobulbs, so that when the plants begin to pick up in spring they have losses to recover before they can make new growth. It is not a question of soil, of that I am certain; but it may be one of atmosphere. There is poison enough in the air at Kew, and especially in winter, to cripple expanding flowers and foliage. Orchid roots are said to have a porous, paper-like skin which absorbs moisture from the air. Every part of the living root does

this. In dry weather this papery covering prevents transpiration from the root-cells, and in wet weather condenses and supplies water to them. To put it roughly, the outer bark of Orchid roots in a water catcher and holder from which the root cells are fed."

Whatever may be the amount of damage caused by loss of roots during the winter, it is certain there is generally a fine display of bloom at Kew, the only exception being after a spell of yellow fog, which has a disastrous effect in many urban districts. And the damage is not limited to the flowers, for some of the leaves become yellow, and have to be removed.

The Cymbidiums are still making a fine display, and a succession is being maintained by the addition of C. eburneum, a fine C. Lowianum with a profusion of its graceful racemes, and C. Lowgrinum, a hybrid of the latter with C. tigrinum. The Cattleyas always show a decrease at this time of year, but the distinct C. citrina is showing for bloom, and there are examples of C. Trianæ and several hybrids, also the brilliant Sophronitis grandiflora, the pretty little Leptotes bicolor, and a few others.

Among Warm house plants may be mentioned an example of the chaste Vanda teres alba, with three blooms, the buff-coloured Aërides Houlletianum, and a few dwarf Angræcums, while the unique plant of Stauropsis Imthurnii, a native of the Solomon Islands, is again throwing up a sturdy spike. A few of the summer-flowering Cypripediums are showing for flower, and several hybrids are in bloom; in short, this genus can be relied upon to produce a succession of flowers throughout the year, and they are among the last flowers to succumb to a spell of fog.

A number of Dendrobiums, species and hybrids, are again in bloom, two of the more interesting being the violet-blue D. Victoria-Regina, and the yellow D. Harveyanum, whose fringed sepals recall the lip of D. Brymerianum, though the fringe is not developed to the same extent. There are also examples of Eria iridifolia, Cœlogyne flaccida, some strong plants of C. cristata, Maxillaria Houtteana, and a well-flowered Panisea uniflora, with Pleione yannanensis and P. Pricei, the latter a Formosan species.

In the Cool house several Odontoglossums and Odontiodas are in bloom, the latter giving quite a brilliant touch of colour. O. rosefieldiensis, the hybrid between Cochlioda Nœtzliana and Odontoglossum triumphans, is very fine, the plant carrying five spikes of reddish orange flowers. Some well-flowered examples of Ada aurantiaca are also in bloom, with the South African Polystachya pubescens, Lycaste Skinneri, and a few species of Masdevallia and Pleurothallis. Among species of the latter may be mentioned a plant of the rare P. astrophora, one of the gems of a large and polymorphic genus, though it requires the aid of a lens to bring out the beauty of its tiny purple flowers. It is one of the botanical rarities in which the collection is so rich, though it is a little too early for many of them to be in bloom.

THE GENUS LUISIA.

LUISIA is a small genus with the habit of Vanda teres, but rather small flowers, and several species are very imperfectly known, though a few others are often seen in botanical collections. Lindley remarked of his L. volucris: "The flowers look like little birds with narrow outspread wings." And Reichenbach, when describing L. Psyche, observed: "There are some Orchids so very bizarre that if we had not seen them alive or dried, but only in Oriental drawings, we could but believe them to be imaginary. . . . Our species has green flowers with very large petals, comparable to the spread ears of a rabbit, and a very singular large roundish green lip, full of blackish violet-purple spots, reminding one of a Persian or Turkish carpet." This character is well shown at t. 5558 of the *Botanical Magazine*, where the species is figured. And of L. Cantharis the writer remarked: "The lip is clasped on either side by the almost conduplicate lateral sepals, and resembles a beetle of the genus Cantharis, with corrugated dull purple elytra. . . . . The top of the lip is appressed to the stem, as in L. volucris, and the petals are deflexed on either side, as if to direct an insect to the pollinia."

The genus was originally established by Gaudichaud, in 1826 (*Freyc. Voy.*, p. 426, t. 37), being based on materials collected in the Marianne Islands. The species has since been greatly confused. Some seven years later, Lindley (*Gen. & Sp. Orch.*, p. 167) made it synonymous with Cymbidium triste, Willd. (Epidendrum triste, Forst.), a native of New Caledonia, to which he also added the Japanese Epidendrum teres, Thumb., and the North Indian Vanda trichorhiza, Hook., forming for it and C. tenuifolium, Willd., a new section of Cymbidium, called Pseudo-Vanda. Blume, who afterwards wrote on the genus, separated the Japanese and Indian plants, but others have been subsequently added, and in the *Flora of British India*, L. teretifolia is regarded as a polymorphic and widely diffused species, extending from Sikkim and Ceylon through the Malay Islands as far as New Caledonia. This view is doubtfully correct, for a drawing of the New Caledonian plant, by Forster, shows quite distinct petals, though the point cannot be confirmed, because of the absence of flowers from Forster's original specimen, which is preserved at Kew. There is also evidence that the material subsequently added to L. teretfolia contains more than a single species, for three different plants which have been more or less confused have recently flowered at Kew, though their identity has not been fully cleared up owing to the imperfect nature of some of the original specimens.

The confusion also involves Lindley's genus, Mesoclastes (*Gen. & Sp.*

Orch., p. 45), which Blume reduced to Luisia, being unaware that one of the two species was an Aërides of the cylindricum group. The other, M. brachystachys, Lindl., is a true Luisia, and it is curious that Lindley failed to connect it with his Cymbidium section, Pseudovanda. Lindley, however, subsequently reduced Cymbidium triste, Roxb. to L. brachystachys, Blume, citing the figure *Wight Ic.*, t. 1691, which represents very well one of the Indian plants which has recently flowered at Kew. Roxburgh describes this as found on trees in the forests which cover great parts of the Delta of the Ganges, flowering during the hot season, and he describes the lip as composed of an inner, oval, concave portion, joined to the lamina, or exterior reniform cordate part . . , colour dark purple, with a few yellow spots. The Kew plant has the ample concave hypochil of Wight's figure, though the yellow is rather the remains of the ground colour on which the purple markings occur.

A second plant, so far as can be told by the description, is L. microptera, Rchb. f. (in *Gard. Chron.*, 1870, p. 1503), which is said to have been sent by Col. Benson from Assam to Messrs. Veitch, and is described as having straw-coloured sepals and petals, and a lip half purplish and half yellow. So far as I can see, the L. brachystachys var. flaveola, Par. & Rchb. f., represents the same species, and in any case it does not agree with the preceding.

A third plant which has flowered at Kew is L. trichorhiza, Blume, the Vanda trichorhiza, Hook. *Exot. Fl.*, i. t. 72.

Another species of the affinity is L. macrotis, Rchb. f. (in *Gard. Chron.*, 1869, p. 1110), a native of Assam which flowered at Tottenham with Mr. Day, whose drawing is preserved (*Day. Orch. Draw.*, xiv. t. 24). This has green sepals and petals, and the lip wholly dark purple, with the hypochil narrow.

R. A. ROLFE.

TWENTY-FIVE YEARS OF ORCHIDOLOGY.

(*Continued from page 27.*)

THE close of the nineteenth century was marked by the introduction of several remarkable Orchids from Madagascar, two of which quickly flowered, namely, Phaius tuberculosus and Cynorchis purpurascens, both of which had long been known to science. The flowering of the Phaius during the early days of 1901 caused some excitement, for it led to the discovery that another species had been masquerading in gardens under this name for about twenty years. This latter, being without a name of its own, was called P. simulans, Rolfe, the flowers of the two being very similar, though the habit is very different. The history of the confusion, and a figure of the true plant, may be found at pp. 41-44 of our ninth

volume, and it may be added that the discovery led to a good deal of controversy. Cynorchis purpurascens soon proved to be a good garden plant, being easily grown and very floriferous, while its bright purple flowers are very attractive. According to M. Warpur, it grows at an elevation of 1000 to 2000 feet, on the prostrate trunks of a Pandanus, and sometimes in tufts of the bird-nest fern, Asplenium nidus. It was figured at page 361 of our fourteenth volume.

A year later three other interesting Madagascar plants flowered, namely, Cymbidium rhodochilum, Cynorchis villosa, and Bulbophyllum Hamelinii. The Cymbidium is one of the most remarkable species in the genus, its large red lip contrasting strongly with the green and black-spotted segments, but it proved to be a very intractable subject, and we believe that all the few plants introduced by M. Warpur died after flowering. It is said to grow at 1800 to 2100 elevation, always in masses of Platycerium which are found on the branches of high trees near the rivers and on the higher slopes of the forest, a peculiarity that should be borne in mind when it is again introduced. The appearance of female flowers on the unique plant of Catasetum quadridens at Kew, and of Chondrobollea Froebeliana, a natural hybrid between Chondrorhyncha Chestertonii and Bollea cœlestis, with M. Otto Froebel, at Zurich, were also interesting events of the year.

Hybrids of the popular genera were appearing in ever-increasing numbers, and the feature of the Temple Show in 1902 was the appearance of a batch of four seedling Odontoglossums, raised by M. Ch. Vuylsteke from O. Pescatorei and O. crispum, which proved to be forms of the earlier O. armainvillierense. Three other hybrid Odontoglossums were also recorded. Two interesting generic hybrids also appeared, in Leptolælia Veitchii and Zygonisia Rolfeana, and we find records of hybrids from Lælia superbiens in L. Nemesis and Læliocattleyaa Cholletiana, of Dendrobium Hunteri, the first hybrid from D. Brymerianum, and of Læliocattleya Ira, the first from Lælia longipes.

The following year was not marked by any particularly outstanding event, though the flowering at Kew of three species of the Chilian genus Chloræa, introduced by Mr. Elwes, was interesting. Here also flowered a plant of the curious saprophyte, Didymoplexis pallens, and Cynorchis kewensis, a hybrid from C. purpurascens (previously mentioned), and C. Lowiana. And there were additions among Odontoglossums and the various popular genera.

The year 1904 witnessed some interesting developments, especially the appearance of Odontioda Vuylstekeæ, the first hybrid of Cochlioda Nœtzliana, which made such a sensation at the Temple Show, and was awarded both a First-class Certificate and a Lindley Medal. It was figured, together with its parents, at page 209 of our twelfth volume. Four

hybrid Odontoglossums were also exhibited at the same meeting, and were figured at p. 201 of the same volume. The raising of Dendrobium nobile virginale by Mr. R. G. Thwaites, and of Læliocattleya elegans by M. Ch. Maron, in both cases true from seed, were interesting events of the year. Among imported species we note the appearance of the handsome Dendrobium regium, of Angræcum infundibulare, which had long been known from dried specimens, the flowering of Vanilla Humblotii, a handsome leafless species from Madagarcar, and of Bulbophyllum virescens and Cypripedium glaucophyllum, two interesting introductions from Java. The genus Cymbidium also supplied an interesting novelty in C. Parishii Sanderæ, which received a First-class Certificate from the R.H.S.

The sensation of 1905 was the rediscovery of the long-lost Cypripedium Fairrieanum, and those who have read the notices which appeared at pp. 129, 138, 207, and 235 of our thirteenth volume will agree that "sensation" is the only suitable word to describe the event, but the flowering of the plant at Kew, and the appearance of a photograph at p. 265, set all doubts at rest. Other interesting events of the year were the flowering of Oncidium corynephorum, Lindl., a handsome species of the Cyrtochilum group which had long been known from dried specimens, of Lissochilus Mahoni and L. Ugandæ, two fine novelties from Uganda; also the appearance of Cymbidium erythrostylum and Vanda Watsonii, two interesting introductions from Annam. Among generic hybrids there were interesting additions in Dialælia Veitchii and Odontonia Lairesseæ, the latter a hybrid of Odontoglossum crispum. Of Odontoglossum itself there were at least a dozen handsome acquisitions, including four seedling forms of O. crispum, O. Thompsonianum, a hybrid between the violet-purple O. Edwardii and O. crispum, O. Lairessei from O. Edwardii and O. Cervantesii, and O. Smithii from O. Rossii and O. spectabile, the two latter being combinations between the Mexican and Columbian Odontoglossums.

In 1905 an International Hybridisation Conference was held in London, at which Orchids were well represented, and our report mentions papers on Natural Hybrids of the Cattleya group by Mr. R. A. Rolfe; Hybridisation as a proof of natural affinity among Orchids, by Prof. Pfitzer; Hybrid Odontoglossums, by Mr. de Barri Crawshay, and on the Germination of Orchids, by M. Noel Bernard. There was also a special Orchid Competition extending throughout the year, the subjects being chosen beforehand, and Diplomas being awarded to the successful exhibits. As to the meetings of the R.H.S., it was remarked that the exhibits had not been equalled in any previous year, either in extent or excellence, and the Society's Gold Medal had been awarded on thirteen occasions, while four Lindley Medals, fifteen Cultural Commendations, about 40 First-class Certificates and 110 Awards of Merit had been given. The imported novelties included Cœlogyne

Mooreana, Cymbidium insigne, Pleione yunnanensis, Oncidium Clæsii, Cypripedium tibeticum, and two interesting Cattleyas, C. Jenmanii and C. Forgetiana. Hybrids were again numerous, and included two additional Odontiodas, heatonensis and Bohnhofiæ, a generic hybrid in Brassoepidendrum stamfordiense, Cœlogyne Brymerianum, the first hybrid in the genus, several beautiful Odontoglossums, and numerous additions to the familiar genera.

The novelties of 1907 were chiefly of hybrid origin, and included Odontioda Bradshawiæ, a striking hybrid between Cochlioda Nœtzliana and Odontoglossum crispum, and Odontioda Devosiana, the corresponding hybrid with Odontoglossum Edwardii, both of which gained First-class Certificates from the R.H.S. Odontonia Elwoodii was an interesting generic hybrid between Miltonia Roezlii and Odontoglossum cirrhosum, and there were over a dozen additions to the genus Odontoglossum, besides some seediing forms of O. crispum. Odontoglossum was now falling into line with the other popular genera, among which latter there was the usual crop of interesting novelties.

(To be concluded).

Root Fungi of Orchids.—In the January issue of the *Orchid Review* (p. 4) I notice a summary by Miss Chevely Rayner on the Endophytic Mycorhiza of Orchids, and I observe the phrase: "Bernard demonstrated the impossibility of raising uninfected seedlings." This is a mistake. During the last years of his life my friend, M. Noel Bernard, obtained the germination of seeds of Phalænopsis Sanderiana × rosea in an aseptic tube. He sent some of the seedlings to me. I still possess one of these plants, and it is perfectly developed, and flowers regularly every year. Therefore we have obtained seedling Orchids without the employment of the Rhizoctonia. During the last years of his life M. Bernard thought the theory would have to be revised.

In the same way, M. Constantin, in his last work, *La vie des Orchidées*, hopes by the employment of different endophytes to effect a change in the morphological character of the plants. I have communicated an experience to M. Bernard which gave negative results. Seeds were obtained of Lælio-cattleya Mozart × Brassavola Digbyana, and seedlings were raised by infection with the Rhizoctonia of a Cypripedium, but they presented no anomalous characters consonant with this theory. It is indisputable that germination is facilitated by the Rhizoctonia, but not that they cannot be germinated in their absence.—F. Denis, Balaruc les Bains, Hérault, France.

It would be interesting to know if the Rhizoctonia is really absent from the roots of the Phalænopsis.—Ed.

CYMBIDIUM EBURNEUM.

CYMBIDIUM eburneum has long been popular in gardens, on account of its beautiful, white and fragrant flowers. It was originally described and figured, in 1847, by Lindley (*Bot. Reg.*, xxxiii. t. 67), from a plant which flowered in the establishment of Messrs. Loddiges, at Hackney. It had been discovered some ten years earlier by Griffith, in the Khasia

Fig. 5. CYMBIDIUM EBURNEUM.

Hills, being met with at Myrung, at about 5000 feet elevation. Griffith, indeed, called it C. syringodorum (*Notul.*, iii., p. 338) in allusion to its lilac-scented flowers. It has since been found at a lower elevation in Sikkim, and also occurs in Nepal. For a good many years it remained rare in gardens, but became common when additional importations were received. As regards colour, it is unique in the genus, though the rather short penduncles fail to carry the flowers clear af the foliage, which is rather a drawback. It is seen to best advantage when grown on into good specimens. It has yielded several fine hybrids, but there is room for improvement so far as its own particular colour is concerned.

CYMBIDIELLA RHODOCHILA.

ABOUT eighteen years ago a very striking Madagascar Orchid appeared in cultivation, which was described as Cymbidium rhodochilum, Rolfe,

Fig. 6. CYMBIDIELLA RHODOCHILA.

and after flowering in a few collections disappeared rather suddenly. It was the third member of a group whose position in the genus Cymbidium has been considered doubtful, and a further comparison of materials supports

the idea that they form a distinct genus, for which the name Cymbidiella is proposed. This will serve to indicate its affinity, as in the case of another remarkable Madagascar genus, Eulophiella. Cymbidium is a rather large terrestrial genus, extending from India and Japan through the Malay Archipelago to Australia, and its characters are well known. Cymbidiella differs in its epiphytic habit, and its general aspect and floral structure are quite different, the lip being strongly three-lobed, with rounded erect side lobes, and an ample, recurved, obcordate or obovate front lobe, giving quite a different appearance to the flower. The three species have the same general character.

CYMBIDIELLA FLABELLATA (Rolfe) is the earliest-known species of the genus, having been figured by Thouars nearly a century ago (*Orch. Iles Afr.*, tt. 39, 40) from Madagascar materials. It was afterwards transferred to Cymbidium by Lindley (*Gen. & Sp. Orch.*, p. 167), but no specimen was available for comparison until Humblot met with the plant, n. 382 of his dried collection being clearly identical with Thouars' figure. Thouars described the colours as green, purple, and yellow, and the purple of the front of the lip is clearly shown in the dried specimen. It is much more slender than C. rhodochila, and has a creeping rhizome and a paniculate inflorescence.

CYMBIDIELLA HUMBLOTII (Rolfe) was also collected by Humblot, in Madagascar, it being n. 492 of his dried collection. He may have sent home living plants, at all events one flowered in the collection of Mr. C. Ingram, Elstead House, Godalming, in 1892, and received a Botanical Certificate from the R.H.S. It was described as Cymbidium Humblotii (Rolfe in *Gard. Chron.*, 1892, ii. p. 8). According to Warpur, who also collected it, it grows on the stems of a palm, Raphia madagascariensis. It is a much more robust plant than the preceding, and has a stout, creeping rhizome, and an ample, much-branched panicle, with numerous green and black flowers, which strongly recall those of Cœlogyne pandurata. It was dicovered much earlier by Curtis, when collecting for Messrs. Veitch, as proved by a dried specimen from his collection.

CYMBIDIELLA RHODOCHILA (Rolfe), the fine species figured on the preceding page, was introduced, in 1900, by M. G. Warpur, who states that it always grows in masses on Platycerium, on the branches of high trees near the rivers, and on the higher slopes of the forest, at an elevation of 1800 to 2000 feet, consequently it prefers a moderate degree of humidity and much light. It flowered at Kew in May, 1902, producing a scape over two feet long, with about twenty flowers. It was described under the name of Cymbidium rhodochilum (Rolfe in *Orch. Rev.*, ix. p. 10; x. p. 84), and afterwards figured (*l.c.*, xiv. p. 209, fig. 25). The pseudobulbs are tufted instead of creeping, and the flowers are light green, densely spotted with

black on the petals and side lobes of the lip, while the front lobe is crimson, with a broad yellow band on the disc, on which are some green spots. Our figure, which is about half natural size, represents a plant which was exhibited by Messrs. Wm. Bull & Sons, at the Temple Show in 1906. It should be viewed from the side, this being the base of the photograph, though there is not room to place the name there. The species flowered in two or three other collections, but we believe that all the plants have since died, which suggests some particular cultural treatment required that is not yet understood.

ORCHIDS IN SEASON.

SEVERAL interesting Orchids are sent from the collection of R. G. Thwaites, Esq., Chessington, Streatham. Flowers of Dendrobium Wiganiæ xanthochilum × chessingtonense represents a very fine deep yellow hybrid, with a claret blotch on the lip. One of Dendrobium Wardianum candidum is the result of self-fertilisation, and the albinism has come quite true from seed. Sophrocattleya Lowelliæ (C. Lawrenceana × Sc. Wellesleyæ superba) is a very rich rose-purple hybrid of good shape, and, it is remarked, is further interesting from the fact that the pollen of ths Sophrocattleya parent was kept in a gelatine capsule from February 1st to May 29th before being used. The remaining hybrid is Sophrocatlælia Raphaeliæ (Sl. Psyche × C. Raphaeliæ), and has reddish buff sepals, broad rose-coloured petals, and a rich purple lip, with a little yellow in the throat. They form a charming little group.

A flower of a fine form of Odontoglossum Theodora is sent from the collection of W. Waters Butler, Esq., Southfield, Edgbaston. The cross is supposed to be O. Rossii majus × O. triumphans grande, and we have no doubt that the record is correct, for the lip is of the typical Rossii character, while the sepals are yellow with large brown blotches, and the petals blotched with brown below and suffused with rose above. It is a handsome thing, and should be taken care of.

Another flower of Lælia Susannæ is sent from the collection of E. F. Clark, Esq., Evershot, Dorset, accompanied by a leaf and three back bulbs, and a flower of Lælia Jongheana for comparison. The parentage was supposed to be L. pumila × Dayana, but afterwards we suggested L. Jongheana and L. pumila. Both bulb and leaves are very short, and the sepals and petals closely resemble L. Jongheana in shape, size, and colour. The front lobe of the lip, however, is enlarged, purple at the sides. and the keels purple in front, while the pollinia now sent are somewhat unequal. The parentage requires confirmation.

CALENDAR OF OPERATIONS FOR MARCH.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

WITH the present month we may look for more genial conditions, and as the different plants start on their annual growth care must be taken that they receive no check. The season being so short in our country, every inducement should be given to the plants to make their growths without interruption. With the increasing power of the sun the temp ratures should now range a few degrees higher in each department, both night and day, than those given in the January Calendar. More atmospheric moisture should be used, and the conditions prevailing at this season should be conducive to free and healthy growth. In regulating and making the conditions necessary to success, due regard must, of course, be taken of the requirements of the plants in each department.

VENTILATION during the present month will require considerable attention. Fresh air must be admitted on all favourable occasions in every department, as this is essential to maintain the atmosphere of the respective houses in a buoyant and healthy condition. All Orchids delight in a pure and sweet atmosphere, but it is not always possible to maintain one in all localities, owing to conditions which we have no control over.

WATERING.—As the plants commence their new growths they will gradually take up more water at the roots, but, still, care is necessary in its application. It is quite an easy matter to make the compost moist, but at this season it is another matter to get it dry again, especially during a dull period, which often occurs at this season.

SHADING.—The means of shading the different plants from strong sunshine should receive immediate attention, as it is also likely that we may have a period of clear, sunny weather, and much harm might accrue to plants with delicate foliage should there be no means of protecting them.

POTTING.—With the present month the potting season will commence, and every opportunity should be taken to push on with this most essential work. It is one of the greatest factors in successful Orchid cultivation, as no plant can thrive in a sour, decomposed compost. To facilitate this work, it is desirable to prepare the different materials beforehand, so that when the busy season comes no valuable time may be lost. Each Orchid should be potted at that season when it least feels the check of disturbance.

CATTLEYAS AND LÆLIOCATTLEYAS.—All those plants which produced their flowers during the late autumn months, and are now showing signs of activity by pushing new roots, may have attention as regards repotting. C. labiata, Gaskelliana, Percivaliana, and Trianæ are species which may also have attention. Owing to the restriction imposed on the importation of

osmunda fibre we have not much choice of material as regards making a suitable compost for these plants. Well cleaned A1 fibre, with a few broken leaves, and sphagnum moss mixed with it, will be found quite satisfactory. The plants must be potted firmly, and be watered with extreme care until the new roots are pushing quite freely. The numerous hybrids in this large family may also have attention wherever necessary.

Deciduous Orchids.—Calanthes, Thunias, Cyrtopodiums, and other deciduous plants will soon need repotting. Good fibrous loam is the chief element of compost for these plants. Personally, I do not advise a rich rooting medium, as disease is often attributable to the use of too rich a compost. The compost for all plants which delight in a high temperature should be placed in a warm place so that it can get thoroughly warmed through before being used, as these plants easily suffer if placed in a cold compost. Whilst in growth these plants require plenty of heat and moisture in the atmosphere, but until well rooted, must have water applied to the compost with caution.

Phaius.—Although these plants are not deciduous, they succeed in a similar compost to the preceding, and under the same cultural conditions, with the exception that they require slightly more air. Any that are in need of new rooting material should have attention just before the new growths commence to push roots.

Spathoglottis.—The different species and hybrids may be treated in precisely the same manner as Phaius. When well rooted, copious waterings until growth is completed are necessary, whilst an occasionial watering with liquid manure will be beneficial. These remarks apply, also, to the different species of Microstylis.

Dendrobiums of the deciduous section are developing their flowers quickly under the influence of increased light and heat, and when well grown few plants make a brighter display. Until their flowers have faded the plants may have water whenever they become dry, when any requiring more room or new material may have attention. D. Phalænopsis and similar species, which delight in a hot humid atmosphere whilst making their growth, may have attention when the new growths have attained the height of three or four inches, and are about to push new roots. A clean fibrous compost made up of equal portions of A1 fibre and sphagnum moss answers their requirements. They should be grown in small receptacles, and suspended in the hottest and brightest position in the warmest house.

Cypripediums.—Continue to repot the later-flowering section of these useful plants as they pass out of bloom. The sooner the repotting is completed the better, for the plants quickly re-establish themselves at this season, and make stronger growths than when left to a later period.

Pleiones.—Such sorts as P. maculata, lagenaria, and Wallichiana are

now growing vigorously, therefore will require more water at the roots. As a preventative against red spider, which sometimes infests them, a slight spraying under their leaves from time to time will be beneficial, but water must not be allowed to enter the centre of the new growths. P. humilis and others which have just passed out of bloom, and are now starting to make new growth, may have attention as regards repotting, following the same procedure as previously advised.

PHALÆNOPSIS.—These are not grown so numerously as once they were, and by many they are considered refractory subjects; but, still, there are few plants which can compare with them for beauty. They are best grown in baskets suspended from the roof, and not placed too near the glass, as they are liable to suffer from extremes of heat and cold. Plants that are commencing to make new roots may have any attention that is necessary as regards the supply of new rooting material. These plants, like many other difficult subjects, are often allowed to suffer for the want of new material, as many are afraid to disturb them owing to their character. Healthy established plants that have roots clinging to the baskets in which they are growing should not be disturbed, beyond removing the old decayed rooting material, and this must be done with care. Those in need of fresh receptacles should have any clinging roots carefully detached with the aid of a thin-bladed knife or similar article. Select for each plant a suitable basket, or suitably drained pan, then work the compost carefully amongst the roots, finishing with the crown of the plant slightly higher than the edge of the basket, or the rim of the pan. A clean fibrous compost with live sphagnum moss is a suitable rooting medium. These plants are best accommodated in a house to themselves, where a hot humid atmosphere can be maintained whilst they are making their growth, with a slightly lower temperature and drier atmosphere whilst at rest. Having no pseudobulbs, every care is necessary at all seasons to prevent any harm overtaking them.

LÆLIA MONOPHYLLA.—This bright scarlet Lælia is not grown as much as its merits deserve. It is not difficult to cultivate, and should be grown in small well-drained pans, potted firmly in a clean compost made up of A1 fibre and sphagnum moss. It succeeds under precisely the same conditions as Miltonia vexillaria but, owing to its stature, when grown with that species, must be elevated well up to the light.

MILTONIA VEXILLARIA, and its hybrids, are pushing flower spikes from the partly-developed pseudobulbs. While in this condition the plants should be watered whenever they become dry, and towards the end of the month may be placed in cooler quarters. The warm end of the Cool house, or the coolest end of the Intermediate house, will answer their requirements. At this season every precaution must be taken against the attacks of thrip

and other insect pests, mild periodical fumigations with some reliable vapourising compound being the best remedy. Before the flower spikes get far advanced it is a good practice to thoroughly cleanse the plant with some safe solution of insecticide, as this will carry the plants safely through the flowering period.

ADA AURANTIACA.—This unique flowering plant may be repotted as soon as its flowers have faded. When grown in quantity its brilliant orange-coloured inflorescences have a pleasing effect. It succeeds in the Cool house, in an ordinary clean fibrous compost.

ODONTOGLOSSUMS.—Continue to repot any inmates of the Cool house as they attain the desired condition of growth. It is safe to repot now, especially if the compost is decomposed, keeping them on the dry side until the new roots enter the new material freely. These remarks apply also to various species and hybrids of Cool house Orchids which commence to make their growths at this season.

GENERAL REMARKS.—No effort should be made to push plants into growth. They should be allowed to start of their own free will, as the growth will be much finer and better in every way if made when the sun has more influence and power.

OBITUARY.

A H. HILDEBRAND.—The *Kew Bulletin* announces the death of Mr. Arthur Helding Hildebrand, C.I.E., who was for over thirty years Superintendent and Political Officer of the Southern Shan States, and who will be remembered in the horticultural world as the introducer of several Orchids and other plants of more than ordinary interest, including the remarkable Lonicera Hildebrandiana, Coll. & Hemsl., which he sent to Kew in 1893. Probably his best Orchid was Dendrobium Hildebrandii, Rolfe (*Kew Bull.*, 1894, p. 182; *Bot. Mag.*, t. 7653), which he sent to Messrs. Hugh Low & Co., of Clapton, who forwarded plants to Kew. This is a handsome and floriferous species, allied to D. tortile, Lindl., with light yellow flowers, or in the case of the variety oculatum with two maroon blotches on the disc of the lip. It is a parent of several interesting hybrids, including D. Elwesii, D. Ellisii, D. Haywoodiæ, D. Rallianum, and D. Boundii. Among other Orchids sent to Kew by Mr. Hildebrand were Bulbophyllum comosum, Coll. & Hemsl. (*Bot. Mag.*, t. 7283), and the striking Orchis monoplylla, Rolfe (*Bot. Mag.*, t. 7601), in which the leaf is copiously blotched with purple-brown. Mr. Hildebrand retired in March, 1902, and returned to his English home at Devizes, Wiltshire. He died at Puddletown, near Dorchester, at the age of 65.

CYPRIPEDIUM FAIRRIEANUM.

THE discovery of the long-lost Cypripedium Fairrieanum is mentioned on another page, and the annexed figure represents one of the plants, which flowered in the collection of M. Joseph Ginot, at St. Etienne, France. It was grown in a low, cool house, in a substantial and well-drained compost, and the conditions evidently proved suitable, for in the preceding year it produced four flowers. It is a form with rather short, broad leaves, and short scapes. We may also recall the fine group of plants grown in the collection of the late Mr. O. O. Wrigley, Bridge Hall, Bury, which was illustrated at page 9 of our eighteenth volume, the plants

Fig. 7. CYPRIPEDIUM FAIRRIEANUM.

having been grown under the same conditions as C. insigne, and with the utmost success. The group contains 33 plants, bearing an aggregate of 81 flowers, and shows well the amount of variation to which the species is subject. Mr. E. H. Woodall has also recorded that the species grows, and thrives, in his garden at Nice, in the open air, at the foot of an olive tree, in company with C. insigne (*O.R.*, xxli. p. 36), under which conditions it gets more heat in summer and more cold in winter than in any ordinary Orchid house. It is a very charming little plant.

SOCIETIES.

Royal Horticultural.

THE usual fortnightly meeting was held at the London Scottish Drill Hall on February 12th, and brought together a fine display of Orchids, the awards consisting of seven medals, three First-class Certificates, an Award of Merit, and two Preliminary Commendations.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), W. Bolton, J. Wilson Potter, R. Brooman White, Arthur Dye, Sir Harry J. Veitch, F. J. Hanbury, C. J. Lucas, W. H. White, A. McBean, J. Cypher, J. E. Shill, T. Armstrong, J. Charlesworth, S. W. Flory, R. G. Thwaites, F. K. Sander, Walter Cobb, Pantia Ralli, E. R. Ashton, Stuart H. Low, and R. A. Rolfe.

Cymbidium Alexanderi album (Veitchii × insigne).—A charming white form, with large and finely-shaped flowers, having only a trace of obscure markings on the side lobes of the lip.—Exhibited by Messrs. J. & A. McBean.

Cypripedium Eurybiades Shillianum (Hera Euryades × Alcibiades).—A magnificent flower, of perfect shape and substance, the dorsal sepal white with numerous purple blotches and spots, and the broad petals cream-yellow with numerous spots on the lower half, and mahogany-red above, while the lip is of the latter colour and the lower sepal considerably enlarged. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

Odontioda memoria F. M. Ogilvie (parentage unrecorded).—A brilliant hybrid, bearing a spike of rich claret-red flowers, with a few irregular whitish markings, and the broad lip lighter with some red markings in front of the yellow disc. Exhibited by Mrs. Ogilvie, The Shrubbery, Oxford (gr. Mr. W. Balmforth).

Award of Merit.

Odontoglossum Gatton-Emperor (Lambeauianum × hybrid unrecorded).—A promising hybrid, having broad violet-purple sepals and petals with the apex and margin white, and the lip white in front, with some purple blotches in front of the yellow crest. Exhibited by Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier).

Preliminary Commendations.

Odontioda Dora (Odm. Aireworth × Oda. Schrœderi).—A very promising hybrid, having well-shaped flowers, with broad, bronzy-red sepals and petals, and the front of the lip white, with some red blotches round the yellow crest. Exhibited by Messrs. Charlesworth & Co.

Odontoglossum Nora (illustrissimum × Dora).—A very fine hybrid,

the flowers being large and dark Indian red in colour, with a pale margin to the petals, and the broad lip white, regularly spotted all over with Indian red. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

Dr. Miguel Lacroze, Bryndir, Roehampton (Orchid-grower Miss Robertson), showed Læliocattleya Serbia Bryndir var., a well-shaped variety, and Sophrocatlælia Meuse Bryndir var., bearing two fine flowers.

Mrs. F. W. Ogilvie, The Shrubbery, Oxford (gr. Mr. Balmforth), sent Cypripedium Winsum (callosum Sanderæ × Winifred Hollington), tinged and dotted with purple on a white ground.

Messrs. Armstrong & Brown, Tunbridge Wells, were awarded a Silver Flora Medal for a fine group, composed largely of well-grown Cattleyas, Odontoglossums, and Odontiodas, with a few Læliocattleyas and Cypripediums, Miltonia Bleuana, Cymbidiums, &c., noteworthy among them being Cattleya Clotho magnifica, a particularly brilliant form, C. Trianæ alba, Læliocattleya Queen Alexandra, Cypripedium Florida (Fowlerianum × glaucophyllum), C. Cupid, and some promising seedling Odontoglossums.

Messrs. Charlesworth & Co., Haywards Heath, also received a Silver Flora Medal for a fine group of well-grown plants, noteworthy among them being the chaste Vanda teres alba with three flowers, Odontoglossum Cereus (Phœbe × Harryanum), combining well the characters of the two parents, O. Carene (Rolfeæ × spectabile), in which the Harryanum influence coming in through both parents was very marked, some brilliant Odontiodas, Cattleya Enid alba, some good Cypripediums, &c.

Messrs. J. Cypher & Sons, Cheltenham, received a Silver Banksian Medal for a good group of choice Cypripediums, with examples of the rare Oncidium cucullatum, Cœlogyne intermedia, apparently combining the characters of C. cristata and C. flaccida, and a few Masdevallias. Among the Cypripediums we noted C. Cupid, C. Dowlingianum, C. Venus var. Boltonii, and C. Lloyd-George (Beeckmanii × aureum Hyeanum), a fine novelty, most like the former in the details of the petals and lip, and the dorsal sepal white with feathered purple lines and a green base.

Messrs. Hassall & Co., Southgate, received a Silver Banksian Medal for a group of Cymbidiums, with Cattleya Trianæ alba and two Odontiodas. Among the Cymbidiums we noted examples of C. Moira and C. Sybil sulphureum, the latter a pretty light yellow form.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Banksian Medal for a good group, in which examples of Sophrocattleya Saxa, Doris and Thwaitesii, with Sophrocatlælia Marathon, and Sophrolælia Psyche were very effective, with Oncidium Kramerianum, Odontioda Cupid, and a few others.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Banksian Medal

for a good group, including Cymbidium Pauwelsii, C. Schlegelii C. Alexanderi Margarita and C. A. roseum, Oncidioda Cooksoniæ, Odontoglossum Beatrice, Lælia anceps waddoniensis, the brilliant Odontioda Diana, Læliocattleya Eunice (L. anceps (white) × C. chocoensis alba), a fine white form with some purple on the front of the lip.

Messrs. Sanders, St. Albans, also received a Silver Banksian Medal for a good group, including Cymbidium Albatross, C. Butterfly, Brassocattleya Orion (C. Enid × Bc. Leemaniæ), a pretty pink hybrid, Cattleya Freda-Sander (Mrs. Myra Peeters × Mossiæ Wageneri), and other interesting things.

Messrs. Flory & Black, Slough, showed Læliocattleya Trident var. ignescens (Lc. Diana × C. Trianæ Backhouseana), a brilliantly-coloured variety, and two hybrid Odontoglossums.

At the meeting held on February 26th there was again a good display, and the quality was well sustained, the awards consisting of two First-class Certificates, three Awards of Merit, three Preliminary Commendations, and five medals. The novelty of the meeting was a group of three plants of Aeridovanda Mundyi, an interesting hybrid between the genera Aërides and Vanda, shown by Sir Jeremiah Colman, Bart.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, W. Bolton, R. Brooman White, C. J. Lucas, Walter Cobb, W. H. White, F. J. Hanbury, J. E. Shill, J. Charlesworth, E. R. Ashton, T. Armstrong, F. K. Sander, Pantia Ralli, J. Wilson Potter, and R. A. Rolfe.

FIRST-CLASS CERTIFICATES.

LÆLIOCATTLEYA SCHRŒDERÆ (Lc. bella alba × C. Maggie-Raphael alba).—A beautiful hybrid, with perfectly-shaped, broad, white sepals and petals, and a broad, purple lip, with a well-fringed white margin and some yellow lines on the disc. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

ODONTOGLOSSUM ST. JAMES (amabile × Amethyst).—A very handsome Odontoglossum, bearing a strong spike of well-shaped violet-purple flowers, with a broad white margin to the segments. Exhibited by Messrs. Charlesworth & Co.

AWARDS OF MERIT.

LÆLIOCATTLEYA BEATRICE BRYNDIR VAR. (C. Schrœderæ × Lc. callistoglossa).—A fine variety, having broad, blush-rose sepals, and the lip very undulate, and ruby purple with a yellow disc. Exhibited by Dr. Miguel Lacroze.

LÆLIOCATTLEYA EUNICE ALBA (Lc. anceps (white) × C. chocoenis alba).—A charming pure white flower, most like a dwarf edition of the former with

an enlarged flower. Exhibited by Messrs. J. & A. McBean, who also staged another seedling with a purple front to the lip.

SOPHROCATLÆLIA BLETCHLEYFLORA VIVICANS (Lc. bletchleyensis × S. grandiflora).—A very brilliant dark scarlet form, with some yellow in the throat of the lip, and most like an enlarged edition of the latter. Exhibited by Messrs. Stuart Low & Co.

PRELIMINARY COMMENDATIONS.

AERIDOVANDA MUNDYI (Aërides Vandarum × Vanda teres).—A remarkable hybrid, most like the former in general character, but with a much enlarged flower, with a modified lip. The flower is white, tinged with lilac. Three plants were shown, each about six inches high and said to be four years old. Exhibited by Sir Jeremiah Colman, Bart.

ODONTIODA ARMSTRONGII ORCHIDHURST VAR. (Oda. Vuylstekeæ × Odm. Armstrongiæ).—A promising seedling, the flower having very broad segments of deep rosy mauve with a few white markings, and the broad lip white, with a large blotch in front of the yellow crest and some small rosy spots. Exhibited by Messrs. Armstrong & Brown.

ODONTIODA JULIET (Oda. Bradshawiæ × Odm. promerens).—A very richly-coloured hybrid of fine shape, the flowers having a broad rosy margin and a large red central blotch, separated by a narrow zone of the paler ground colour. Exhibited by Messrs. Charlesworth & Co.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), showed a well-flowered Dendrobium Queen of Gatton, and a large pan of Sarcochilus Fitzgeraldii and S. Hartmannii, each containing several plants with an aggregate of about two dozen spikes, and forming a charming exhibit.

Dr. Miguel Lacroze, Bryndir, Roehampton Lane (gr. Miss Robertson), sent Odontioda Ethel Bryndir var. (Odm. chelseiensis × Odm. percultum), a well-coloured form.

J. Bridson Seatle, Esq., Upper Richmond Road, Putney, sent Odontioda Graireana var. May, a good form of this pretty Odontoglossum Rossii hybrid, having the sepals and petals well marked with cinnamon-red and the lip rose-coloured in front.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a choice group, including a brilliant Sophrocattleya Atreus gloriosa, the rare Maxillaria sanguinea, Cypripedium Myson (Mrs. Wm. Mostyn × Fairrieanum), well marked with purple on the dorsal sepal, Miltonia Venus, good examples of Cymbidium Diana and Beryl, Sophronitis grandiflora, and a number of promising Odontoglossums, Odontiodas, and others (Silver Flora Medal).

Messrs. Charlesworth & Co., Haywards Heath, also staged a fine group, including good examples of Odontoglossum Penelope (Rolfeæ × Olympia), the distinct Odontonia Irene (Miltonia Warscewiczii × Odontoglossum

hastilabium), Miltonioda Ajax, Odontioda Juliet (Oda. Bradshawiæ × Odm. promerens), Dendrobium nobile virginale, Miltonia Bleuana and Venus, and several good Odontiodas, Odontoglossums, and others (Silver Flora Medal).

Messrs. Hassall & Co., Southgate, staged a good group of Cymbidiums, including examples of C. Alexanderi, Corona, Sybil and Castor; also a well-grown Læliocattleya Myra (Silver Banksian Medal).

Messrs. Stuart Low & Co., Jarvisbrook, staged a brilliant little group, including well-grown exambles of Sophrocattleya bletchleyflora vivicans, Sc. Saxa, Sophrolælia Psyche, Dendrobium Brymerianum, Lycaste Skinneri, and other showy things (Silver Banksian Medal).

Messrs. Sanders, St. Albans, staged a good group, including the white Cattleya Mary-Sander, C. Snow-Queen, Cymbidium Elfin (Parishii Sanderæ × Pauwelsii), Læliocattleya Primrose (Lc. Trimyra × C. Schrœderæ), the rare Bulbophyllum concinnum, and others (Silver Banksian Medal).

Messrs. J. & A. McBean, Cooksbridge, sent four good plants of Læliocattleya Eunice (L. anceps waddoniensis × C. chocoensis alba), including pure white forms and one with the front of the lip purple; also a finely-grown example of Odontoglossum Gladys (cirrhosum × spectabile).

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held at the Coal Exchange, Manchester, on February 7th, the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, A. Hanmer, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. Shackleton, H. Thorpe, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum promerens var. Gratrixiæ, O. exultans var. Vulcan, O. Louise var. The Premier (Lambeauianum × Pescatorei Charlesworthii), O. Thwaitesiæ var. rubellum (Harryanum × Rossii rubescens), and Cypripedium Sir Wm. Chance West Point var. (memoria Jerminghamiæ × Thompsonianum); from S. Gratrix, Esq.

Odontoglossum Amillus (Amethyst × illustrissimum), and Cypripedium Desdemona var. rotundum (Alcibiades × Mrs. Cary Batten); from Dr. Craven Moore.

Cypripedium Saladin (Chapmanii × Olenus), and C. Thisbe; from T. Worsley, Esq.

Odontoglossum crispum var. John Hartley (parentage unknown); from John Hartley, Esq.

AWARDS OF MERIT.

Odontioda Schrœderi Ashlands var., Odontoglossum Caroline (loochristiense × Pescatorei), and O. Monte-Video (Thompsonianum × Lambeauianum); from R. Ashworth, Esq.

Cypripedium Vivian (Wilson-Potter × Euryades), and C. Clonia (Æson giganteum × exul); from T. Worsley, Esq.

Cypripedium Desdemona var. Conyngham); from Dr. Craven Moore.

Cattleya Monarch (Trianæ Royal Monarch × Empress Frederick); from S. Gratrix, Esq.

Brassocattleya Enid (C. Enid × Bc. Leemaniæ); from the Exors. of the late John Leeman, Esq.

FIRST-CLASS AWARDS OF APPRECIATION.

Odontoglossum exultans (excellens × crispum), and O. Orissa (ardentissimum × Hyelandianum); from Messrs. Armstrong & Brown.

FIRST-CLASS CULTURAL CERTIFICATES.

To Mr. S. Davenport, for Odontioda Schrœderi Ashlands var., Dendrochilum glumaceum, and D. g. var. validum.

To Mr. S. Smith, for Cypripedium Thompsonii magnificum.

Large Silver Medals were awarded to R. Ashworth, Esq., Newchurch (gr. Mr. S. Davenport), and to Messrs. Cypher & Sons, Cheltenham, in both cases for very fine general groups of well-grown plants.

Interesting exhibits were sent by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); Tom Worsley, Esq., Haslingden (gr. Mr. T. Wood); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); the Exors. of the late John Leeman, Esq., Heaton Mersey (gr. Mr. S. Smith); W. R. Lee, Esq., Heywood (gr. Mr. C. Branch); John Hartley, Esq., Morley (gr. Mr. Coupe); Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton); Messrs. Armstrong & Brown, Tunbridge Wells; and Mr. W. Shackleton, Bradford, a good many of which are included in the above list of awards.

At the meeting held on February 21st the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. J. Bolton, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Snowflake, var. Gratrixiæ (labiata alba × Dusseldorfii Undine), a good white form, with canary yellow markings in the throat, and Odontoglossum crispum Trojan, a well-shaped, heavily-blotched flower; from S. Gratrix, Esq.

Odontoglossum Lawre-crispum (Lawrenceanum × crispum), bright yellow, with crimson spots, and Odontioda Dorothy (Oda. Vuylstekeæ × Odm. crispum), of good shape, and very bright colour; from P. Smith, Esq.

Odontioda Xeres (Odm. elegans × Oda. Charlesworthii), a large, round, chestnut-red flower, with broad, flat lip; from Col. Sir John Rutherford, Bart.

Odontioda Diana Hamilton (C. Nœtzliana × Odm. amabile), a large flower, of even colour, 2¾ inches across; from J. H. Walker, Esq.

Miltonia Venus (vexillaria × Phalænopsis), a pretty flower of good shape, with purple lines on the lip; from Messrs. Charlesworth & Co.

AWARDS OF MERIT.

Odontoglossum ardentissimum Tiger, Lycaste Bessie Brown, Cattleya Trianæ Mooreana, and Dendrobium Ophir (aureum × signatum); from S. Gratrix, Esq.

Odontoglossum highfieldiense (Harryanum × Vuylstekei); from R. Ashworth, Esq.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum exultans var. Duchess of Athlone; from S. Gratrix, Esq.

A Large Silver Medal was awarded to R. Ashworth, Esq., Newchurch (gr. Mr. S. Davenport), for a fine group, in which Odontoglossums and the familiar genera were well represented.

A Large Silver Medal was also awarded to Messrs. Cypher & Sons, Cheltenham, for a fine group of Cypripediums and Dendrobiums, with examples of Odontoglossum Rossii, O. aspersum, Aërides Vandarum, and others.

Interesting exhibits were staged by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); John Walker, Esq., Pendleton (gr. Mr. T. Arran); Messrs. Charlesworth & Co., Haywards Heath; Messrs. Keeling & Sons, Bradford, and Mr. W. Shackleton, Bradford, several of which appear in the above list of Awards.

ORCHID NOTES AND NEWS.

TWO meetings of the Royal Horticultural Society will be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, during March, on the 12th and 26th, when the Orchid Committee will meet at the usual hour, 11.45 a.m. The following meeting is fixed for April 9th.

The Manchester and North of England Orchid Society will hold meetings at the Coal Exchange, Manchester, on March 7th and 21st. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m. The following meeting is fixed for April 4th.

From an advertisement on another page it will be seen that the celebrated Bridge Hall collection of Orchids, formed by the late O. O Wrigley, Esq., Bridge Hall, Bury, will be sold on the premises, by Messrs.

Protheroe & Morris, on April 16th and two following days. The collection is well known for its quality, and the excellent culture of the plants, which have repeatedly gained honours from the Manchester Orchid Society. It is also familiar to our readers from the notes which have appeared in our pages from time to time, Mr. Wrigley having been one of our oldest and most enthusiastic correspondents.

Two errors crept into recent issues which were not noticed in the proofs, and should be corrected. Mr. O. O. Wrigley died on October 11th, not November, as stated at p. 250 of the Nov.-Dec. issue. And the date of presentation of the Duke of Bedford's Orchid collection to Kew was 1844, not 1884, as given at p. 22 by a typographical error.

Flowers of two varieties of Cymbidium insignigrinum are sent from the collection of G. Hamilton Smith, Esq., Northside, Leigh Woods, Bristol, by Mr. Walker. The seed, obtained from C. insigne × tigrinum, was sown on March 14th, 1914, and in February, 1917, two spikes appeared, with five and six flowers, which strikes us as a very quick result in Cymbidium. This year the plant has two spikes with twelve and six flowers, while a second plant has two spikes of five flowers each. The colour and markings of C. insigne come out very strongly on the lip, while in other respects the flowers are fairly intermediate.

ANSWERS TO CORRESPONDENTS.

[Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work].*

E.F.C.—The dwarf habit, shape of leaf, and the shape and colour of the sepals and petals, and the keeled, deep yellow base of the throat, must in some way have come from L. Jongheana, while the shape and colour of the front lobe equally suggests L. pumila. The latter influence may have given the purple colour to the keels, unless L. Dayana was the other parent. The pollinia are slightly unequal, but not those of Læliocattleya, and there is no evidence of Cattleya in either the habit or the shape of the flower.

J.W.—There are two or three somewhat different varieties of Cattleya Trianæ with a purple band on the petals, the flowers not being identical in other respects. The species is very variable in colour.

BEGINNER.—Probably the result of the house becoming too cold at night during frosty weather. If the young growths are healthy they will recover. The cool house should not be allowed to fall so near freezing point, even for a short time.

E.H.—Sow the seeds at once on the compost of some healthy plant that will not require potting for some months, and be careful that the compost never becomes dry. Seedlings should appear in due time, but they are rather irregular in germinating.

BETA.—The white varieties of Lælia anceps almost invariably flower later than the coloured forms, and they are mostly found in a different district. We regard them as forms of a single species.

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MEETINGS of the COMMITTEE for the purpose of adjudicating upon the Orchids submitted will be held at the Coal Exchange, Manchester, on April 4th and 18th, 1915. All exhibits must be staged before 12 o'clock noon. Open to Members and the Public from 1 to 4 p.m. Admission to non-Members, 6d. each.

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VOL. XXVI. APRIL, 1918. No. 304.

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Editor invites communications on interesting subjects (which should be written on one side of the paper only), also portraits, &c., of rarities.

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The Orchid Review

VOL. XXVI. APRIL, 1918. No. 304.

TWENTY-FIVE YEARS OF ORCHIDOLOGY.

(*Concluded from page* 55.)

THE year 1908 witnessed the sixteenth Quinquennial Horticultural meeting at Ghent, and assumed a special importance because it also celebrated the Centenary of the Society's existence. It was marked by a brilliant display of Orchids, the leading features being an exceptionally fine miscellaneous group staged by Major G. L. Holford, occuping a space of over 300 square feet, and containing many remarkable plants; a brilliant group of hybrid Odontoglossums, staged by M. Ch. Vuylsteke, and containing about 115 plants, notable among them being O. maculatissimum, whose parentage is indicated in its name; and the miscellaneous group of M. Firmin Lambeau, which gained the Gold Medal offered by His Majesty, the King of the Belgians. There were many other notable exhibits, and Dendrobium Bronckartii won the prize for the best new Orchid of recent introduction.

A noteworthy event of the year was the publication of the *Orchid Stud-Book*, including the name, parentage, and references to the literature and published figures of all known hybrids up to the end of the previous year, with a frontispiece of Calanthe Dominyi, the first hybrid of artificial origin. For further details we must refer to the first five pages of our seventeenth volume.

Over a dozen new hybrid Odontoglossums were recorded, and Odontioda furnished the striking O. Charlesworthii, with O. keighleyensis, O. St.-Fuscien, and O. Thwaitesii, indicating how completely the difficulty of raising seedlings in this popular group had been overcome. The generic additions were Diacattleya Colmanii and Chondropetalum Fletcheri.

In 1909 further progress was reported, and Miltonioda Lindenii and M. Harwoodii were remarkable generic combinations between Miltonia and Cochlioda, while Oncidium hybridum was the first artificial hybrid in the genus. To the latter the new Certificate of Appreciation for progress was awarded, also to Dendrobium atro-Brymerianum, Miltonioda Harwoodii, and Odontioda Graireana. Novelties among species included the striking Philippine Dendrobium Sanderæ, Mormodes revolutum, from Peru, and Pleurothallis Birchenallii, from Colombia. Cycnoches densiflorum was a

remarkable novelty, of which both sexes flowered together in the collection of the Rev. J. C. B. Fletcher, while the females of C. maculatum, previously unknown, appeared at Kew. A revision of this genus appeared in the *Kew Bulletin*. Another interesting event was the appointment by the R.H.S. of a committee to consider the question of the nomenclature of generic hybrids.

Among the novelties of 1910 we find such striking plants as Anguloa Cliftonii, Sobralia Charlesworthii, and Oncidium Sanderæ, the latter a Peruvian addition to the small O. Papilio group, and still very rare. With the latter also came Houlletia Sanderi, Lycaste peruviana, and Brassia Forgetiana. Cattleya Lawrenceana Mary-Regina was the albino of the species. Oncidioda Charlesworthii was an interesting generic addition, and there was the usual crop of hybrid additions to the various popular genera.

Of 1911 it was written "Scarcely a meeting now passes without some addition to the list." The reference was, of course, to hybrids. Glancing through the records we find generic additions in Adioda St.-Fuscien, and Odontocidium Fowleri, while Trichopilia Gouldii added another genus to the list. Odontioda Cupid linked up the very distinct Odontoglossum ramosissimum with Cochlioda, and we find some additional combinations between the Mexican and Colombian Odontoglossums. Novelties among species were few in number, the most striking being Oncidium Claesii, which flowered in the collection of Sir Jeremiah Colman, Bart.

The event of 1912 was undoubtedly the great Royal International Horticultural Exhibition, held at Chelsea, about the end of May, and which produced such a display of Orchids as had never before been brought together. For particulars of this event we must refer to our report at pp. 163-171, of our twentieth volume. Another innovation was the holding by the R.H.S. of an exhibition of Autumn-flowering Orchids in November, in connection with an Orchid Conference (also fully reported at pp. 366-374), an event which we hope to see repeated when normal times return. The novelties of the year included the Philippine Dendrobium Schuetzii, which received a First-class Certificate from the R.H.S., and Cirrhopetalum miniatum, which is unique in having vermilion red flowers. Of generic hybrids two were recorded, both trigeneric, namely Vuylstekeara Hyeana and Lowiara insignis, in the naming of which the new R.H.S. rule applicable to such cases was applied. A hybrid between Miltonia vexillaria and Odontoglossum crispum at length appeared, namely Odontonia Firminii. The flowering of Ophrys Grampinii, the first hybrid of artificial origin in the genus, by M. Fernand Denis, and the identification of Cercospora Odontoglossi, a parasitic fungus which has caused trouble among Odontoglossums, were also noteworthy events.

The year 1913 saw another of the great Quinquennial Shows at Ghent, this time on a new site, and again brought together a brilliant display of Orchids, which we fully reported at the time. The novelties of the year were not numerous, but included the brilliant Habenaria Roebelenii, a near ally of H. militaris, with Maxillaria Fletcheri, Cycnoches Cooperi and C. Forgetiana, three interesting introductions from Peru. Hybrids were again numerous, and included a curious combination between Cattleya citrina and Lælia purpurata, called Læliocattleya Freak. There were also six additions to Odontonia, including such striking plants as O. brugensis and O. Cholletii, the latter figured at page 177 of our twenty-first volume.

Of 1914, what shall be said? It opened under conditions of great promise, and the anticipated event of the year was the opening of the Reichenbachian Herbarium. It, indeed, took place, and was duly recorded (*O.R.*, xx. pp. 206-207), but shortly afterwards the tornado of war suddenly swept across the track, and the end of the catastrophe is not yet in sight. Up to that point the progress of Orchidology, though ebbing and flowing, had been steadily upwards, and we have little doubt of its resumption when the present horror has passed over. The causes we shall not discuss; they are pretty fully understood, but when the time comes, Orchidists must take their share in decreeing that never again shall the world be exposed to a similar outbreak of madness, and the consequent submergence of all that makes life worth living. We have an abiding faith in the future, and Orchidology, one of the most delightful of the peaceful arts, will come into its own again.

NOTES FROM KEW.—IV.

AN interesting feature of the Kew collection is the periodic accession of Orchids from the various colonial Botanic Gardens and other institutions, in addition to those obtained by way of exchange and purchase. In this way a good many novelties have been obtained, as might be seen by a glance through the Decades of New Orchids published from time to time. Such a collection tends to become excessively diversified in its composition, and the enormous number of species grown adds naturally to the difficulty of sucessful culture, for it is almost impossible to place all of them under suitable cultural conditions. The difficulty is somewhat lessened by an increased number of houses, with a corresponding increase in the range of climate, but this does not get over the trouble that in a good many cases the natural conditions under which the plants grow are not known. In such cases one has to judge largely by appearances, which are sometimes deceptive. A knowledge of the genus affords a useful clue, but is not always

sufficient, for different species of the same genus do not always grow under identical conditions, as may be illustrated by such familiar genera as Dendrobium and Odontoglossum. Information as to the native country is invaluable, but it does not necessarily indicate the requirements of a plant, unless the altitude is also known. Absence of knowledge of the habitat often leads to a good many experiments being made before suitable cultural conditions are found, and it is a matter of common experience that after all one's trouble there remain a number of intractable subjects, and some of them of a very attractive character if only they could be grown. It is in such a collection as that at Kew where one comes most in contact with them, but perseverance has overcome many difficulties, and it is remarkable what a large number of species are grown successfully in the space at command.

The composition of such a collection naturally varies considerably from time to time, but a good idea of its general character may be seen by an article which appeared in the *Kew Bulletin* in 1891 (pp. 52-73), under the title, "List of Orchids flowered at Kew in 1890." In a preliminary note it is remarked: "Since 1887 a record has been kept of the Orchids which have flowered each year at Kew. The list for last year (1890) does not materially differ from those of previous years, but it is published as affording data as to the time and duration of the flowering period of Orchids cultivated in England. It enumerates 766 species and varieties.

"The Kew collection of Orchids differs in character as well as in extent from all other collections, except those of similar establishments. No attempt is made to give prominence to the most showy-flowered by the cultivation of a large number of examples. On the other hand, every effort is made to obtain and cultivate even small and unattractive kinds of scientific interest, such as the ordinary collector would consider beneath his notice. In the limited space available for Orchids as comprehensive a collection as possible is aimed at. Consequently, while there is never a great display of Orchid flowers at Kew, at no time of the year is the collection wanting in floral interest. Thus, while the highest number of species flowered in any one month was 125, in May, the lowest was 85, in January. The average for each month was a fraction over one hundred."

The collection was then estimated to contain about 1342 species, of 158 genera, excluding hybrids and varieties. The genera most numerous in species were Dendrobium with 69, and Masdevallia with 53. The total number in bloom for both March and April was rather over one hundred, of which a good proportion would be out together. In a few cases the flowering period extends over a long period, the flowers being borne in succession.

At the present time a good number of interesting things are in flower or bud, including a plant of Lueddemannia Vyvereana, from Peru, a member of a genus found in very few collections, Stauropsis gigantea, remarkable

for its very fleshy flowers, which are light yellow spotted with brown, Warscewiczella discolor, with showy violet-purple flowers, Cypripedium hirsutissimum and Druryi, both very attractive species, while among showy species we may mention the brilliant Renanthera Imschootiana just beginning to expand. Two plants of the rare Myrmecophila tibicinis are throwing up spikes. Pleurothallis scapha and Birchenallii are two allied species having long very scuminate sepals, and P. stenosepala, with solitary green flowers, has the pedical pressed closely to the leaf, but, curious to note, the mature capsule becomes erect. Stelis omalosantha is a Brazilian species with very hairy flowers, and both Physosiphon Loddigesii and P. Lindleyi bear numerous spikes. Notes on a number of the smaller species are held over.

CALANTHE CHLOROLEUCA AND ITS ALLIES.

AN interesting Himalayan Calanthe is flowering in the collection of H. J. Elwes, Esq., Colesborne Park, Gloucestershire. It was introduced from Sikkim four years ago, and proves indentical with C. chloroleuca, Lindl. It is one of the evergreen set, and bears an erect raceme, the flowers having yellowish green sepals and petals, and a four-lobed, pure white lip, stained with light yellow at the base. The species was described in 1854, from materials collected in Sikkim by Sir J. D. Hooker (*Lindl. Fol. Orch.*, Cal. p. 10), being localised as hot valleys at 2000 feet. It has since been collected by Treutler at 6000 to 8000 feet. It is figured in *Ann. R. Bot. Gard. Calc.*, v. p. 31, t. 45. Lindley made a second species, C. galeata, (*l. c.*, p. 5), based on a drawing by Hooker, and localised as "Wild in Sikkim at 4000 feet, near Darjeeling, May 9, 1848," but Sir Joseph has since expressed the opinion that it is only a faded C. chloroleuca, which is quite borne out by comparison. The species has since been confused by King and Pantling with the following one.

C. VAGINATA, Lindl. in *Paxt. Fl. Gard.*, iii. p. 37, was based on materials collected by Griffith in Bhotan, the localities being given as above Telagong, and at Chuka, on wet banks, at 6000 feet. Kew possesses also a specimen from Griffith, localised as from Darjeeling. There is also a specimen collected by Pantling in the Lachong Valley, Sikkim, at 9000 feet (n. 468), which is the type of the plate wrongly called C. chloroleuca, in *King & Pantl. Orch. Sikkim*, p. 171, t. 231. It differs from C. chloroleuca in having a much shorter, straight spur, and in its light yellow lip with narrower side lobes. The sepals and petals are green. There is no evidence that the species has been in cultivation. A third species of the same group has also been greatly confused.

C. HERBACEA, *Lindl. Fol. Orch.*, Cal. p. 10. This was described as "Wild in Sikkim, in hot valleys at 1-4000 feet.—J. D. Hooker (v. s. sp. et ic. pict)." The type sheet in Lindley's Herbarium, however, consists of a specimen of the purple C. Masuca, Lindl., with a copy of a single green flower taken from a painting by Cathcart, which is preserved at Kew. This painting was carefully labelled C. herbacea by Lindley, and as the flowers are green with a pure white lip, as described by him, it must be regarded as the type of the species. There is, indeed, no evidence that Hooker ever collected C. herbacea, for the specimens at first so labelled by him were afterwards corrected to C. Masuca. This confusion seems difficult to understand, but it may be remarked that the flowers in both cases dry brown. C. herbacea is only known from Sikkim, where it was originally met with by Cathcart, and afterwards at Rungbee, at 6000 feet elevation, by Pantling. There is also an old garden specimen at Kew, and two original drawings of plants that were obtained from Sikkim, and flowered at Calcutta. The spur is longer than in C. chloroleuca, and the lobes of the lip much narrower. C. elytroglossa, Rchb. f., ex *Hook. f. Fl. Brit. Ind.*, v. p. 353, collected in Sikkim by Treutler, and at Rungbee, at 6000-6500 feet, by Clarke, represent the same species.

R. A. ROLFE.

NATURAL HYBRID ODONTOGLOSSUMS.—Now that hybrid Odontoglossums of artificial origin have become so common in gardens, it may be interesting to recall the condition of things with natural hybrids some 35 years ago, as recorded by the late Sir Trevor Lawrence (*Gard. Chron.*, 1883, i. p. 534) :—

"It seems to me we are getting into much confusion with the genus Odontoglossum. Of late years many hundreds of thousands have been imported, and so-called hybrid varieties are now constantly turning up. Every week I see several, some weeks many, and am asked by experienced Orchid growers what name I should give to this or that plant. I cannot answer. There is a vast tribe which may be held to fall generally under the name of O. Andersonianum. But many of these have an alias in O. hebraicum. Then O. Wilckeanum is the type of another tribe, which has (generally speaking) rather narrow segments of a yellowish or whitish ground colour, heavily spotted or blotched with various tints of reddish or yellowish brown, a lip with one or more large spots, and petals much toothed. We have besides Odontoglossum Coradinei in many varieties, seemingly kinsmen of O. Lindleyanum ; O. deltoglossum, O. lyroglossum, *cum multis aliis*. . . . The curious and perplexing thing is, that no two of these so-called hybrids are exactly alike, while many may differ greatly from one another. I believe that botanists will find it necessary to reconsider the specific characters and names of Odontoglots."

REVERSION IN ODONTOGLOSSUM PESCATOREI.

THE ground colour of Odontoglossum Pescatorei is normally white, and a correspondent some time ago called our attention to the occasional appearance of yellow forms among imported plants, and asked if these were not something more than mere variations.

The earliest recorded yellow form that we know of was in 1882, when Reichenbach described O. Pescatorei flaveolum (*Gard. Chron.*, 1882, i. p. 330). He remarked: "This is a highly curious variety, with very blunt oblong petals. There is some sulphur on all parts of the perigone. It was sent by Messrs. Veitch & Sons." Two years later it was painted by Mr. John Day (*Orch. Draw.*, xxxix. t. 31), who remarked: "This is the only yellow O. Pescatorei I have ever seen or heard of. It is in flower at Messrs. J. Veitch & Sons, a small plant with a scape of four flowers as drawn. There is nothing else but colour to distinguish it from ordinary varieties. The colour is quite accurate when I drew it from the fresh opened flowers, but when I saw it a week later much of the yellow had faded out of the petals, but the labellum still maintained its colour." The latter may be described as primrose yellow, with a slight rosy suffusion in the sepals, and the usual red streaks on the side lobes of the lip.

O. Pescatorei Golden Gem was exhibited at a meeting of the R. H. S. in July, 1907, by Messrs. Charlesworth & Co., and we noted it as having "pretty yellow flowers, much resembling O. Pescotorei in shape, though we suspect that the colour is due to the influence of O. triumphans" (*O. R.*, xv. p. 246). This was a suggestion that it might be a form of O. excellens.

There is a clear yellow form of O. excellens, namely O. excellens var. luteolum (*O.R.*, iv. p. 248), which flowered in the collection of the late Baron Sir H. Schröder. In this the characteristic brown blotches of the type are nearly absent, being limited to a few markings on the lip, with a single spot on the lateral sepal of one flower of the inflorescence. The flowers are sulphur yellow, with a whitish area in the centre of the petals, and the usual intermediate shape.

O. excellens is a natural hybrid from O. Pescatorei and triumphans, and if it recrosses with the former we should expect to find reversions showing a yellow colour, and any remains of the triumphans character would afford conclusive evidence of hybridity. In the absence, however, of the characteristic triumphans shape the evidence is not conclusive, and if white-ground Odontoglossums were originally derived from yellow, as there are grounds for believing, we might have reversion without hybridity. Evidence from direct experiment would be interesting.

R. A. R.

PHYSOSIPHON LODDIGESII.

PHYSOSIPHON Loddigesii is the original species of a small genus of Pleurothallis-like plants, in which the sepals are united at the base into a narrow tube, which is somewhat inflated below and constricted at the mouth. It was originally described and figured by Loddiges, in 1830 (*Bot. Cab.*, t. 1601), under the name of Stelis tubata (probably a slip for tubulata, in allusion to the narrow tube). As to its origin, Messrs. Loddiges remarked: "We received this curious little plant from Mr. Deppe,

Fig. 8. PHYSOSIPHON LODDIGESII.

who collected it at Xalapa, in New Spain, in 1828." It was afterwards separated by Lindley, under the name of Physosiphon Loddigesii (*Bot. Reg.*, sub t. 1797), and later a good figure appeared in the *Botanical Magazine* (t. 4869). It is a plant of the easiest possible culture, and produces a profusion of graceful spikes of reddish orange flowers. When out of bloom it somewhat resembles a Masdevallia, and it thrives under the same treatment. It is now flowering freely at Kew, together with the much finer P. Lindleyi, Rolfe (*Kew Bull.*, 1893, p. 61), which is also a native of Mexico. There are several Andine and Brazilian species of the genus, which are not known in cultivation.

R. A. R.

VANDA TERES CANDIDA.

WHITE varieties of Vanda teres are decidedly rare, and the flowering of the chaste V. teres alba at Kew, as recorded at p. 50, serves to recall an earlier white form, namely, V. teres candida, which flowered as long ago as 1875, in the collection of Lord Crewe, in Cheshire. Flowers were sent to Reichenbach, who remarked (*Gard. Chron.*, 1875, ii. p. 225):

Fig. 9. VANDA TERES CANDIDA.

"There has been for years and years much talk about the phenomenon of a cream-white Vanda teres, just as there would be of a rosy one, provided the common form were white. I have finally been so lucky as to obtain this *rarissima avis*." The plant here figured, which evidently represents the same form, is one that flowered in the Royal Botanic Garden, Calcutta,

and was photographed by Mr. A. E. P. Griessen, who wrote of it: "Its flowers are pure white, as white as any Orchid may be expected to be, with only the disc of the lip yellow. Another specimen flowered during May in the Agri-Horticultural Gardens, of Alipore. These are the only two specimens I know of so far."

The V. teres candida of the *Orchid Album* (ix. t. 409), which flowered in the collection of the Duke of Marlborough, at Blenheim, has white flowers with a rosy stain on the front of the lip, and apparently represents the variety aurorea, Rchb. f., which was originally described from flowers sent by Mr. W. Bull, the author calling it (*Gard. Chron.*, 1881, i. p. 688) a lovely variety. Flowers snow-white, with a light rosy hue on the anterior part of the lip, and some light yellow in the throat." We believe there are a few other plants in existence in which the albinism is not quite complete.

A well-grown clump of the white variety would make an interesting sight, one, for example, comparable with that of the type described by Mr. Prestoe, as grown in Trinidad. "Some years ago," he remarked, "I placed a good tuft on an old stump of Bauhinia ungula. It was thus fully exposed there, and has always flowered most profusely. Before it has never given a spike. I have had over 250 spikes open at the same time. When it flowers it is all brown and shrivelled." The conditions are presumably similar to those of its native habitat.

HYBRID OPHRYSES.

IT is with much pleasure that we record the further success of M. Fernand Denis, Balaruc-les-Bains, France, in hybridising the interesting genus Ophrys. M. Denis now sends three inflorescences of his seedlings, with notes of two others. The latter, we find, represent crosses which have been recorded as natural hybrids; the flowers themselves have been sent to Dr. M. Keller, Switzerland, who is engaged on a monograph of European Orchids, but we hope to receive examples later.

The three inflorescences sent have all been derived from M. Denis' original O. tenthredinifera × aranifera, which proved identical with O. Grampinii, Cortesi (*O. R.*, xx. p. 199; xxii. p. 100). One of these was self-fertilized, and gave fertile seeds. The seedlings vary considerably. Some are said to be like O. Grampinii and var. etrusca; one showed a strong reversion towards O. tenthredinifera (this M. Denis is unable to send, as the flowers have been eaten), and others were intermediate between Grampinii and aranifera. Two of the latter are sent. Both have light

green sepals and petals, and one has a dark brown lip, with a whitish area on the disc, on which are two brown lines; the other is light green with some light brown markings. Both have retained part of the hybrid character.

The third inflorescence represents a secondary hybrid from O. Grampinii × bombyliflora, and the seedling is now flowering for the first time. We cannot match it and, as it is doubtful whether its origin could be made out by comparison, we propose to call it O. fallax, Rolfe. The flower is most like C. aranifera in shape, but the sepals and petals are strongly suffused with rose, showing the influence of O. tenthredinifera. The lip is pale green, more or less suffused with light brown, and here only a trace of the influence of O. bombyliflora is apparent, for that species has light green sepals and petals, and a strongly three-lobed brown lip. M. Denis remarks that this is the third secondary hybrid that he has raised, the others being O. Grampinii × Speculum and O. Grampinii × lutea (O. Denisii, M. Keller—see *O.R.*, p. 127).

M. Denis further writes: "I have this year two other new artificial hybrids, O. aranifera × Speculum and O. aranifera × lutea. I have found much difficulty with the latter cross, as from about twenty fertilisations made during the last twelve years I have only raised a single seedling." These two crosses are identified as follows:—

O. Macchiattii (*Camus Monogr. Orch. Eur.*, p. 300) is the name of the hybrid from O. aranifera × Speculum. It was originally described in 1881 as O. aranifera × Speculum, by Macchiatti (*Nuovo Giorn. Bot. Ital., xiii.* p. 316), from materials collected at Sassarese, Baddimanna, in the Island of Sardinia (south of Corsica). It may occur in other localities where the two species grow together, though we have not found another record.

O. quadriloba (*Camus Monogr. Orch. Eur.*, p. 295) is the plant originally described and figured, in 1851, as O. aranifera var. quadriloba, *Rchb. f. Fl. Germ.*, xiii. p. 89, t. 454, fig. 2, being based on a drawing by Barla. It was subsequently figured by the latter (*Ic. Orch. Alpes-marit.*, p. 65, t. 52, fig. 9-10), from specimens found in the environs of Nice. The flowers are bright yellow with brown markings on the disc of the lip, and clearly combine the characters of O. aranifera and O. lutea.

These continued experiments are particularly interesting, because they illustrate what is probably taking place in nature. Fertile hybrids not only reproduce themselves from seed, but recross with the original parents, and with allied species that grow with them; this in each case being accompanied by more or less reversion, which would account for the numerous puzzling intermediate forms that occur where allied species grow together. We hope that M. Denis will be able to continue and extend his experiments.

R. A. Rolfe.

CALENDAR OF OPERATIONS FOR APRIL.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

THE weather during the last few weeks has been on the whole favourable for plant life, with plenty of light, and fair progress has been made at this early season of the year. April is often very changeable, which necessitates watchfulness and consideration in the matter of ventilation, so that the plants may not receive a sudden check, caused either by two much cold air blowing upon them, or by insufficient air, shading, or moisture. Shading from bright sunshine must now be generally adopted for all Orchids, excepting those grown in the Mexican house, which revel in light and air. It will be well to emphasise the advice concerning the benefit of shading Orchids during the early spring months, when the plants are emerging from the dull days of winter to the bright ones of spring. The beautiful sunshine we have enjoyed recently has had a most stimulating effect upon all Orchids. New roots are pushing forth, together with new growths, and everything is full of promise for the future. So fast will be the growth at this season that it will be sharp work, with the depleted staffs available, to keep abreast of the work.

REPOTTING.--Whatever plants are repotted, let them be done carefully and well, while those which can reasonably be expected to go through the season successfully without it, should be left undisturbed.

TEMPERATURES.—The different houses, with the exception of the Cool house, may now be raised five degrees higher than the figures given in the January number. The Cool house should be kept as near as possible at the figures there given. With the increased temperatures more humidity or atmospheric moisture must be maintained, to provide growing conditions for the plants, and to prevent attacks of insect pests. The conditions of growth provided for the plants at this season of the year cannot have too much consideration or attention.

WATERING.—With the brighter days and the increased ventilation, the plants will take up more water; but it must be applied with discretion, and if sufficient moisture is maintained in the atmosphere no harm will accrue from a plant occasionally becoming dry.

CALANTHES.—Among the numerous plants that are now commencing to grow, and need attention before the new roots attain any length, are the deciduous Calanthes of the vestita and Veitchii section, which hold a prominent position as winter decorative subjects. Previous to repotting, the plants should be thoroughly overhauled and closely examined for scale insects and other pests which may infest them. Care must be taken while cleansing the pseudobulbs not to injure the eyes or young growths at the

base. The old, dead roots may be cut off to within an inch or so, to form a support that will keep the plants steady until the young roots have a firm hold of the new compost. The pseudobulbs may be potted singly, or three or four large ones, or even five or six smaller ones, may be placed in a seven-inch pot. Perfect drainage is essential, and the compost should consist of half turfy yellow loam from which the earthy particles have been taken, one-fourth chopped A1. fibre, and one-fourth dry cow dung, with a moderate quantity of live sphagnum moss, small crocks, and coarse silver sand. These materials should be well mixed together, and allowed to become warm before being used. When repotting, the compost should be made moderately firm, allowing sufficient space for a top-dressing at a later period when the plants have become thoroughly established and are growing rapidly. For several weeks after repotting the plants will require little or no water, until the new roots have freely entered the new material. Their surroundings should be kept moderately moist by damping between the pots occasionally. When the roots have got thoroughly hold of the new material, and the growths have made considerable progress, abundance of water is required.

DENDROBIUMS.—The species and numerous hybrids of this important genus have for some time formed a prominent feature in many collections, and a house of well grown plants makes a delightful picture. As the plants emit new roots quickly when the growths are a few inches high, those that need repotting should be attended to as speedily as possible after their flowers have faded. When repotting well established plants, root disturbance should be avoided as much as possible, but the old decomposed material must be removed. Unless the old material is removed, there is danger of the centre of the compost becoming a sour decomposed mass, and the centre bulbs decaying from loss of roots, and this means the breaking up of specimen plants into small ones, which is not to the credit of the grower. It is an easy matter to grow smaller plants, and personally I do not advocate the breaking up of plants except when necessity demands it. Dendrobiums root freely in chopped A1. fibre and sphagnum moss. Extreme care is necessary not to give too much water until the roots are moving freely in the new material.

CATTLEYAS AND ALLIES.—In a representative collection of Cattleyas, Lælias, and allies, there will at all seasons be some that require attention as regards repotting, and this operation should be carried out when they are about to push new roots from the rhizome, the plants at that stage suffering the least possible check. If the routine laid down in the *Orchid Review* from time to time is carried out systematically, each plant getting attention at its proper season, they will soon speak for themselves by their healthy and robust condition. A clean fibrous compost, a buoyant atmosphere, and a

careful use of the water pot, are the chief essentials to success with these beautiful plants.

LYCASTES.--Plants of this genus, whether species or hybrids, develop new growths immediately they pass out of flower, and any that are in need of repotting should be attended to. Specimens that are pot-bound should be given larger pots, sufficiently large to accommodate them for at least two seasons. They should have the old material carefully picked out and the roots disentangled, as I do not believe in potting Orchids into larger pots with their roots an entangled mass. Plants that have lost their roots, from too much or too little water, should be carefully shaken out and placed in pots just large enough to hold them. Dead and decayed roots and rootless pseudobulbs should be removed. Lycastes succeed in a similar compost to the green-leaved Cypripediums.

SACCOLABIUMS AND ALLIES.—Aerides, Saccolabiums, Angræcums, and similar plants that require new compost, should be attended to at once, for they will push forth new roots rapidly at this season, and as these are very tender, and easily broken, it is advisable to get them done before there is any danger of this occurring. Use well-drained pots, and a compost of live sphagnum moss, or equal portions of clean AI. fibre and sphagnum.

MAXILLARIAS.—These quaint flowering plants should now be examined as to their need for more pot room. Such varieties as M. Sanderiana and others which are showing their flower spikes should not be disturbed until their flowering period is over. Maxillarias are generally grown in pots, with the exception of M. Sanderiana and others which produce their flowers in a downward direction, and these are best grown in baskets, suspended, where their flowers show to advantage. These plants succeed in a similar compost to Cattleyas, and care must be taken that newly-potted plants are not exposed to strong sunshine.

ODONTOGLOSSUMS.—Any plants of O. crispum, O. Pescatorei, and the numerous hybrids of this beautiful genus that are not flowering, and are in need of new material, may now have attention, but none should be disturbed unless they are absolutely in need of it. Those having sufficient room, and the material in good condition, should not be repotted before the autumn. Plants that have their new growths overhanging the edge of the pots may be turned out, all useless bulbs removed, and all the decomposed compost picked out, after which they should be repotted into the same-sized pot. The material for repotting should consist of a mixture of peat, AI. fibre, and sphagnum moss, in equal parts, with sufficient small crocks added to keep the whole open. Odontoglossums suffer to a greater extent than any other Orchids if allowed to remain in a decomposed compost. These remarks also apply to Cochliodas, Odontiodas, and similar plants, which for cultural purposes may be treated in almost precisely the same manner

as Odontoglossums. Odontoglossum citrosmum, now pushing up flower spikes, may have the water supply slightly increased.

Oncidiums.—O. varicosum and other late-flowering species that are in need of new material, may have attention whenever new roots are observed to be pushing from the base of the new growths. They succeed in a similar compost to that used for Odontoglossums.

General Remarks.—The daylight-saving order will necessitate someone putting in long days in most places, as the sun and clocks are now disjointed as regards the work of shutting up the houses and other matters appertaining to Orchid culture. This matter may appear trivial, but during the present shortage of labour it may cause many some anxiety, and in many cases it will be advisable for someone to remain later in order to attend to the necessary work.

ODONTOGLOSSUM HARVENGTENSE AUREUM.

A BRILLIANT yellow Odontoglossum is sent from the Royal Botanic Garden, Glasnevin, by Sir Frederick W. Moore, under the name of O. crispum Glasnevin yellow. It was obtained from Messrs. Stuart Low & Co., some years ago, and flowered in 1915, It is again in bloom, and the remains of the spike, with five flowers, have been forwarded, with a suggestion that it may not be a pure crispum. The other blooms have been sent away for hybridisation purposes. It is one of the most beautiful yellows that we have seen, but we believe it to be a yellow form of O. harvengtense, the natural hybrid between O. crispum and O. triumphans, for the broad, rounded lip, with a few minute marginal dots, the nature of the crest, and the broad, only slightly denticulate column-wings, all show the influence of O. triumphans. The flowers are of excellent shape and substance, and measure $3\frac{1}{4}$ inches in diameter across the petals, while the colour is clear canary yellow, with a slight rosy suffusion at the back of the sepals. The disc of the lip is deeper yellow, shading to white at the margin and apex, while there is a medium-sized brown blotch in front of the crest, and one or two small ones on either side. It is most comparable with a fine yellow that flowered in the collection of John Day, Esq., in March, 1884, and of which he made a painting (*Orch. Draw.*, xli. t. 53), this having flowered among some plants of O. crispum of Messrs. Shuttleworth & Carder's importing two years earlier. Mr. Day remarked that this was much the most yellow form that he had seen, but it is not as bright as in the present one. It also had a suffusion of rose at the back of the sepals, and the three flowers show, respectively, one, three and six small blotches at the apex of the lip. It may be a reversion from O. Wilckeanum.

R. A. Rolfe.

SCUTICARIA STEELEI.

THE remarkable Guiana Orchid here figured has been known for upwards of eighty years, but is not often seen in good condition at the present time. It is remarkable for its long, whip-like leaves, which sometimes reach a length of three to four feet, while the flowers, which have an expanse of nearly three inches, are borne singly on rather short peduncles, and are light

Fig. 10. SCUTICARIA STEELEI.

yellow in colour, spotted with red-brown. The species was introduced from Demerara by Mr. Matthew Steele, in 1836, and flowered in the collection of John Moss, Esq., Otterspool, near Liverpool, in the following year, when it was figured in the *Botanical Magazine* (t. 3573) under the name of Maxillaria Steelei, Hook. It afterwards became the type of a new genus, being called Scuticaria Steelei by Lindley (*Bot. Reg.*, 1843, Misc. p. 14). Its habitat is given by the Brothers Schomburgk, who collected it during their exploration of British Guiana in 1840 to 1844, as on the banks of the rivers Essequibo and Demerara, growing on the trunks of trees, and flowering in

June and July. It was formerly introduced in quantity, but has never become common. It suceeds best affixed to a block of wood, with a little fibre attached, and requires the temperature of the Cattleya house. The plant here figured flowered in the Royal Botanic Garden, Glasnevin, and shows well its remarkable character. The Brazilian species which is sometimes imported under the same name is the allied S. Hadwenii.

SOCIETIES.

ROYAL HORTICULTURAL.

AT the fortnightly meeting held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on March 12th, there was a good display, and the awards consisted of five medals, two First-class Certificates, three Awards of Merit, and a Cultural Commendation, the latter to a finely-grown specimen of Neomoorea irrorata from the collection of H. T. Pitt, Esq.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Gurney Wilson, W. Bolton, R. A. Rolfe, R. Brooman White, S. W. Flory, Sir Harry J. Veitch, Walter Cobb, W. H. White, Pantia Ralli, T. Armstrong, F. J. Hanbury, R. G. Thwaites, J. Wilson Potter, W. H. Hatcher, and F. K. Sander.

FIRST-CLASS CERTIFICATES.

CATTLEYA CLOTHO VAR. GENERAL PERSHING (Enid × Trianæ Grand Monarch).—A superb variety, of excellent shape and substance, the petals being 3½ inches broad, prettily crimped, and light rose in colour, while the ample lip is violet-purple in front, with some bright yellow in the throat. Exhibited by Messrs. Charlesworth & Co.

ODONTIODA WINDSOR (Oda Sanderæ × Odm. illustrissimum).—A large and very handsome hybrid, having broadly rounded, scarlet sepals and petals, with traces of narrow whitish markings at the margin, and a strongly four-lobed lip, mottled with red on a yellow ground in front, and with a dark red blotch in front of the yellow crest. Exhibited by Messrs. Flory & Black.

AWARDS OF MERIT.

CATTLEYA CAPPEI ALBA (Schrœderæ alba × Trianæ alba).—A large and beautiful albino, having much of the general shape of C. Schrœderæ, and the colour pure white, with a light yellow disc. Exhibited by Messrs. Armstrong & Brown.

ODONTIODA ALCANTARA RUBRA (Oda. Cooksoniæ × Odm. eximium).—A richly-coloured variety, having well-shaped, ruby-red flowers, with a deep yellow crest to the lip. Exhibited by Messrs. Charlesworth & Co.

SOPHROCATTLEYA MRS. J. ANSALDO (Sc. warnhamiensis × C. Empress-

Frederick).—An attractive hybrid, most resembling the Cattleya parent in shape, the colour light salmon with a rosy shade, and the lip purple-rose, with some yellow lines in the throat. Exhibited by J. Ansaldo, Esq., Rose Bank, Mumbles.

CULTURAL COMMENDATION.

NEOMOOREA IRRORATA.—To Mr. Thurgood, gardener to H. T. Pitt, Esq., Rosslyn, Stamford Hill, for a finely-grown specimen of this interesting Orchid, bearing two well-developed spikes, the best with 23 flowers.

GENERAL EXHIBITS.

Mrs. F. M. Ogilvie, The Shrubbery, Oxford (gr. Mr. Balmforth), showed a charming little group, to which a Silver Banksian Medal was awarded. It contained the handsome Odontoglossum Ceres Fowler's var., Lycaste Skinneri alba, a fine Cattleya Tityus, Læliocattleya Dominyana, Sophrocatlælia Marathon, and three fine varieties of Cattleya Trianæ.

Messrs. Armstrong & Brown staged a very fine group, including some good examples of Miltonia vexillaria, Bleuana, and Venus, Cattleya Trianæ Edgar Knight, one of the Backhouseana set with a broad purple band at the apex of the petals, a fine Cymbidium Alexanderi roseum, Brassocattleya Cliftonii magnifica, Oncidium concolor, Cypripedium Boltonii and others, Odontioda Mars (Oda. Bradshawiæ × Odm. Mars), a fine seedling, with the lower two-thirds of the segments heavily blotched with vinous-red on a cream-coloured ground, Odontoglossum Nora var. Harlequin (illustrissimum × Dora), O. King Albert (crispum × Armstrongiæ), white with claret-coloured blotches, and other promising seedlings (Silver Flora Medal).

Messrs. Charlesworth & Co., Haywards Heath, staged a fine group of well-grown plants, in which some good examples of Odontoglossum crispum xanthotes, O. armainvillierense xanthotes, O. Othello, O. Rolfeæ, and other blotched hybrids were brightened up with numerous Odontiodas, a fine form of Dendrobium Brymerianum, the striking Odontonia Irene, Brassocatlælia Joan, a richly-coloured form of Eulophiella Rolfei, Læliocattleya Eurypides, Hypatia, and others (Silver Flora Medal).

Messrs. Hassall & Co., Southgate, staged a good group, including forms of Cymbidium Alexanderi, Capella, Corona, and Sybil, in well-grown examples, with Læliocattleya Moonbeam (Lc. Ballii × C. Schrœderæ), yellow with some purple on the front of the lip, and a form of Cattleya Trianæ (Silver Banksian Medal).

Messrs. Sanders, St. Albans, staged an interesting group, including examples of Cymbidium Cooperi and C. Doris, Læliocattleya Elfin (C. Lueddemanniana Stanleyi × Lc. Canhamiana Rex), a promising white with the front of the lip purple, the rare Oncidium Cavendishianum, Renanthera Imschootiana, Eria bicolor, and Maxillaria arachnites (Silver Banksian Medal).

Messrs. Flory & Black, Slough, staged a small group, including the chaste Cattleya Cowanii alba, Sophrocatlælia Beta (Sl. Psyche × C. Maggie-Raphael alba), Odontoglossum Rosslyn (Rolfeæ × illustrissimum), a very promising hybrid, prettily blotched and spotted with purple on a white ground, and a pretty yellow hybrid from Lælia harpophylla × Brassolælia Jessopii.

At the meeting held on March 26th the Orchid exhibits were rather less numerous, and the awards consisted of four Medals and two Awards of Merit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, W. H. White, Sir Harry J. Veitch, R. Brooman White, R. G. Thwaites, Pantia Ralli, F. K. Sander, H. G. Alexander, E. H. Davidson, F. J. Hanbury, C. J. Lucas, and R. A. Rolfe.

AWARDS OF MERIT.

BRASSOCATTLEYA DORIS LANGLEY VAR. (C. Rothschildiana × Bc. Maroniæ).—A fine hybrid, the flowers being of good shape, with broad, rosy-mauve sepals and petals, and a darker lip, with some deep yellow on the disc, and purple lines in front and at the base. Exhibited by Messrs. Flory & Black.

DENDROBIUM ALPHA VAR. ELEANOR (euosmum × regium).—A charming variety, bearing large, bright rose-pink flowers, most like a well-developed D. regium in character, and the lip rather darker, and with a light yellow throat. Exhibited by Sir Jeremiah Colman, Bart.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent Odontoglossum illustrissium var. purpureum, an attractive violet-purple variety with white margins and tips to the segments, also an interesting series of Dendrobium flowers, including the fine D. Lady Colman, D. Brymerianum, Zeno, Thwaitesiæ, Bartelsianum, Golden-Ray, and various others, forming a charming little group.

J. Ansaldo, Esq., Rosebank, Mumbles, sent Læliocattleya J. Ansaldo, (Haroldiana × unrecorded), having salmon-buff sepals and petals, and the front of the lip ruby-purple.

Dr. Miguel Lacrose, Roehampton (gr. Miss Robertson), sent Odontoglossum San-Luis (eximium × Fascinator), bearing a spike of six, well-shaped and richly-coloured flowers, fairly intermediate in character.

Pantia Ralli, Esq., Ashstead Park (gr. Mr. W. H. White), sent Brassocattleya Digbyano-Schrœderæ var. Bradshawiæ, bearing two fine white flowers, with a clear yellow disc to the well fringed lip. It is part of the original certificated plant.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a choice group, including many fine Odontoglossums and Odontiodas, Miltonia vexillaria G.

D. Owen with a spike of seven flowers, a fine Laeliocattleya George Woodhams, Sophronitis grandiflora, Cattleya Clotho and C. Schrœderæ Hercules, Cypripedium Maudiæ, and others. Among the Odontoglossums we noted the rare O. nævium, O. eximillus Orchidhurst var., a fine white, blotched with light violet and bearing a spike of fifteen flowers, O. Nora, O. Conqueror, and some promising seedlings, while the Odontiodas included O. Ariel (Odm. Crawshayanum × Oda. Cooksoniæ), with vinous-purple sepals and petals, and traces of white markings, and a rose-coloured lip, with a rather spiny yellow crest, O. Royal-Gem Orchidhurst var., a very fine form, with good examples of O. Henryi, Zephyr, Cooksoniæ, aud others (Silver Flora Medal).

Messrs. Charlesworth & Co., Haywards Heath, staged a fine group of well-grown plants, the majority being Odontoglossums and Odontiodas, with few Cattleyas and Læliocattleyas, Odontonia Irene, and cut spikes of Eulophiella Peetersiana and Neomoorea irrorata. Odontoglossum Dora was a particularly fine plant, bearing an inflorescence of 18 flowers, and O. Marjorie (illustrissimum × Pescatorei Veitchianum), a promising hybrid with well-spotted flowers, and a broad, Pescatorei-like lip. We noted also good examples of O. crispum xanthotes, Odontioda Red- Cross, O Joan, and various other showy things (Silver Flora Medal).

Messrs. Stuart Low & Co., Jarvisbrook, staged a very pretty little group, including two well-bloomed Sophronitis grandiflora, Sophrocatlælia Hon. Barbara Wilson (C. Fabia × Sl. heatonensis), with four flowers, having bright rose sepals and a darker lip, Sophrocattleya Atreus, Læliocattleya Pronax (Lc. George-Woodhams × elegans), Oncidioda Cooksoniæ, Odontioda Vuylstekeæ, and several other good things (Silver Banksian Medal).

Messrs. Sanders, St. Albans, staged a good group, including several hybrid Cymbidiums, Læliocattleya dulce var Sanderæ (C. Mendelii × Lælia anceps alba), white with a yellow disc to the lip, Lc. Goldcrest, a light rose form of Lc. Joy-Sander, a fine Odontoglossum mirum, O. Fascinator, Odontioda Rolfei (C. vulcanica × Odm. Hunnewellianum), and other interesting things (Silver Banksian Medal).

Messrs. Flory & Black, Slough, sent a good white Cattleya Magali-Sander, and Brassocattleya Rosita (Bc. Irene × C. Dowiana Rosita), a distinct and attractive thing, having cream-white flowers of good shape, much flushed and mottled with rose, and much claret-red marking on the lip.

We were also much interested in a nearly complete series of paintings of British Orchids, shown by C. E. Clarke, Esq., Wilmington Avenue, Chiswick, including such rarities as Cephalanthera rubra, the Irish Spiranthes Romanzoffiana, Cypripedium Calceolus (rare as to native

specimens), Orchis militaris, and practically all the common species, the plants being represented life size.

Manchester and North of England Orchid.

At the meeting held at the Coal Exchange, Manchester, on March 7th, the members of Committee present were: Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, P. Foster, A. Hanmer, J. Howes, A. J. Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (Sec.).

First-class Certificates.

Cattleya Hercules (Empress-Frederick × armainvillierensis), (a Silver Medal being also awarded); C. Monarch var. Colossus (Trianæ Grand Monarch × Empress-Frederick), and Sophrocattleya Thwaitesiæ flammea (S. grandiflora × C. Mendelii); from P. Smith, Esq.

Cattleya Freda-Sander (Mossiæ Wageneri × Mrs. Myra Peeters), and Dendrobium Cybele album; from S. Gratrix, Esq.

Odontoglossum Gladys var. Conyngham (cirrhosum × crispo-Harryanum, from Dr. Craven Moore.

Odontioda Hypatia var. Bolholt (Odm. ardentissimum × Oda. Diana), from Capt. Horridge.

Awards of Merit.

Odontoglossum mirum General Brusiloff and O. m. J. B. Lakin; from J. J. Bolton, Esq.

Brassocattleya Enid rosea (C. Enid × Bc. Leemaniæ), and Cypripedium Valentine (Archimedes × Thompsonii magnificum); from Exors. of the late J. Leeman, Esq.

Odontoglossum crispum Nirvana; from Dr. Craven Moore.

Cattleya Lady Rowena var. Goldcrest (C. Suzanne Hye × Warneri alba); from S. Gratrix, Esq.

Odontoglossum ardentillus; from Wm. Pickup, Esq.

Cymbidium Alexanderi aurantiaca; from Mr. J. Evans.

First-class Awards of Appreciation.

Odontoglossum Nora (illustrissimum × Dora), O. Pickupiæ, and Odontioda Royal-Gem var. violacea; from Wm. Pickup, Esq.

Odontioda Coronation var. Rainbow (Oda. Vuylsteke × Odm. eximium); from P. Smith, Esq.

Cultural Certificate.

To Mr. J. Law, for a plant of Dendrobium nobile nobilius, carrying 160 flowers.

N.B.—The plant of Odontioda shown by Col. Sir J. Rutherford, Bart., at the meeting held on February 21st, should read O. Ceres, not O. Xeres as stated in the report.

A Large Silver Medal was awarded to Messrs. Cypher & Sons, Cheltenham, for a very fine group of showy Orchids, in which choice Cypripediums and Dendrobiums were well represented, with examples of Sophronitis grandiflora, Cirrhopetalum picturatum, Calanthes, and others.

The Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers), staged a fine group. in which choice varieties of Lycaste Skinneri, and the hybrids L. Balliiæ and L. Tunstillii, made a brilliant display, with a few Odontoglossums, Sophronitis grandiflora, and others.

Other interesting exhibits came from the Exors. of the late J. Leeman, Esq., Heaton Mersey (gr. Mr. S. Smith); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); Wm. Pickup, Esq., Great Harwood (gr. Mr. H. Mercer); J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); Capt. Horridge, Bury; Messrs. Keeling & Sons, Bradford; Messrs. J. & A. McBean, Cooksbridge; and Mr. J. Evans, Lymm; a number of which are included in the above list of awards.

At the meeting held on March 21st the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Thorp, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Brenda nobilior, Brassocattleya Ivernia (Bc. Lady-Wigan × Thorntonii), and Odontioda Samuel-Gratrix; from S. Gratrix, Esq.

Odontioda Evansiæ; from R. Ashworth, Esq.

Dendrobium nobile King George; from H. H. Bolton, Esq.

Cattleya Clotho Leeana (Trianæ Grand Monarch × Enid Majestic), a Silver Medal being also awarded; from W. R. Lee, Esq.

AWARDS OF MERIT.

Dendrobium chessingtonese Prince of Orange, D. Lady-Colman West Point var., Cattleya Enid var. Gratrixiæ, and Odontoglossum Windsor; from S. Gratrix, Esq.

Odontoglossum crispo-Harryanum Georgius Rex; from R. Ashworth, Esq.

Læliocattleya Eunice alba (L. anceps alba × C. chocoensis alba); from Messrs. J. & A. McBean.

FIRST-CLASS AWARDS OF APPRECIATION.

Odontoglossum Alport-Gem; from S. Gratrix, Esq.

CULTURAL CERTIFICATES.

To Mr. Rogers, for Lycaste Skinneri Mrs. Hamilton Smith, Phalænopsis Stuartiana, and Oncidium ampliatum majus.

To Mr. J. Lupton, for Cymbidum Parishii Sanderæ, carrying five flower spikes.

To Mr. S. Davenport, for Sophronitis grandiflora.

Large Silver Medals were awarded to R. Ashworth, Esq., Newchurch (gr. Mr. S. Davenport), for a fine general group; to H. H. Bolton, Esq., Newchurch (gr. Mr. W. Eastwood), for an excellent group of Dendrobiums, in which varieties and hybrids of D. nobile were finely represented; and to W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), for a fine group of Cattleyas, Odontoglossums, and Cypripediums.

Silver Medals were awarded to Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), for a fine general group; and to Messrs. Cypher & Sons, Cheltenham, for another fine lot, in which Dendrobiums, and Cymbidiums, with a few others, were prominent.

Interesting exhibits were staged by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); the Exors. of the late O. O. Wrigley, Esq., Bury, (gr. Mr. E. Rogers); Messrs J. & A. McBean, Cooksbridge; and Messrs. Charlesworth & Co., Haywards Heath, several of which are included in the above list of awards.

ORCHID NOTES AND NEWS.

TWO meetings of the Royal Horticultural Society will be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, during April, on the 9th and 23rd, when the Orchid Committee will meet at the usual hour, 11.45 a.m. The following meeting is fixed for May 7th.

The Manchester and North of England Orchid Society will hold meetings at the Coal Exchange, Manchester, on April 4th and 18th. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m. The following meeting is fixed for May 9th, when the annual meeting will be held in the afternoon. It is suggested that the nomination forms for candidates for seats on the Committee shall, for this season at least, be discontinued, and that at the annual meeting the whole of the retiring members (some of whom are serving in His Majesty's Forces) be re-elected. In the event of any member wishing to make any other nomination (which *must* be with the nominee's consent), the same must be forwarded to the Secretary prior to the annual meeting on May 9th.

J. Harrison Dick.—We greatly regret to hear of the death of Mr. J. Harrison Dick, who has been for some years Editor of our American contemporary, the *Florists' Exchange*. He was previously Editor of the *Journal of Horticulture*, and at an earlier date Assistant Editor of the

Gardening World. He married a daughter of the late Mr. A. J. Bruce, of Chorlton-cum-Hardy, a well-known specialist in hardy insectivorous plants, and leaves a widow and one daughter.

ROOT-FUNGI OF ORCHIDS.—With respect to the seedling of Phalænopsis Sanderiana × rosea, mentioned at page 55, M. Fernand Denis writes that it was sent to him direct by M. Noel Bernard in an aseptic tube, and he has never doubted that the germination was effected without the presence of any Rhizoctonia. We fully accept the history of the plant, and recognise that M. Bernard was an expert in the art; still the experiment is rather opposed to M. Bernard's previous experience, and we wondered whether the fungus might not have obtained access to the tube by some accident, as is sometimes the case with bacteria. A microscopic examination of the roots might afford some definite evidence.

HEXADESMIA CRURIGERA.—Mr. C. H. Lankester writes from Cartago, Costa Rica. I am pleased to see a figure of Hexadesmia crurigera (*O.R.*, XXV. p. 128). It is the best hedgerow Orchid of this district, and quite abundant, usually on Erythrina Corallodendron.

The economic use of Orchids are not numerous, but we have just come across a record that in the Bahama Islands the tubers of the indigenous Bletia purpurea, when made into tea, are good for fish poisoning. The source is, Gardiner & Brace, Provisional List of the plants of the Bahama Islands, p. 355, and it is added that in Andros they are used for cuts, and called wild ginger.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

F.D.—Many thanks. A report on the second lot will appear next month.

J.W.—Masdevallia simula, Rchb., f. The flowers are invariably borne on very short scapes at the base of the leaves, and are easily overlooked.

HYBRIDIST.—We believe that the development of bacteria is due to imperfect sterilisation of the materials, but it is none the less disappointing in the ease of a choice cross. The Odontioda is probably a stray seedling from some other batch, but we cannot identify it with certainty. It may be a form of O. Bradshawiæ, which is extremely variable, probably due to the fact that the Odontoglossum parent is not always a pure crispum.

C.H.L.—Many thanks for notes, which we hope to utilise.

A.J.K.—We have not yet found a record of the book you enquire about.

E.C.—Cattleya Trianæ delicata.

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HEADQUARTERS: THE COAL EXCHANGE, MARKET PLACE, MANCHESTER.

A MEETING of the COMMITTEE for the purpose of adjudicating upon the Orchids submitted will be held at the Coal Exchange, Manchester, on May 9th, 1918. All exhibits must be staged before 12 o'clock noon. Open to Members and the Public from 1 to 4 p.m. Admission to non-Members, 6d. each.

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THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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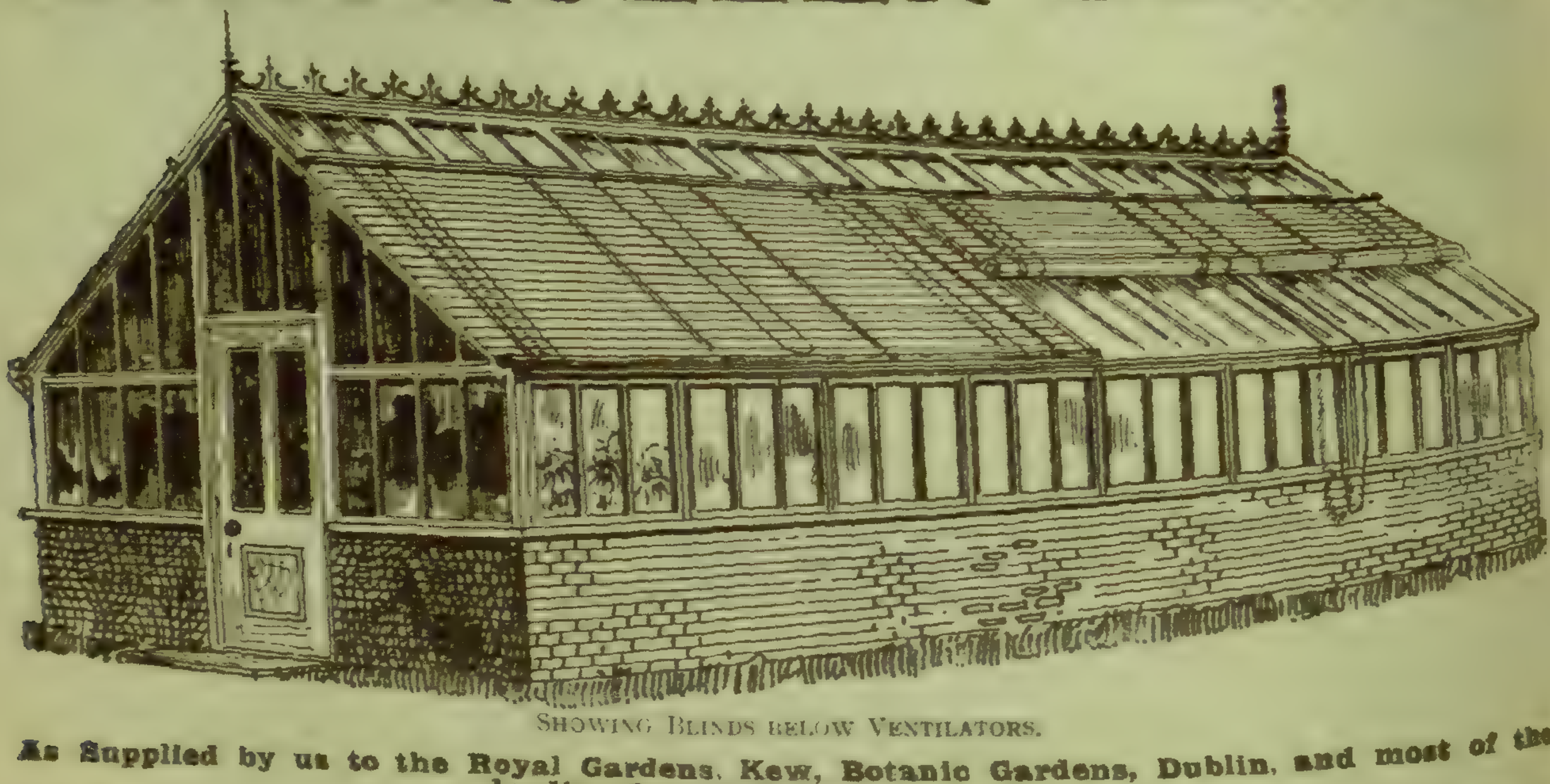

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The Orchid Review

VOL. XXVI. MAY, 1918. No. 305.

NOTES FROM KEW.—V.

AN interesting feature of the Kew collection is the considerable number of miniature species that are grown, and which may be seen in bloom from time to time. They are of the most varied description, the majority being small species of familiar genera that grow naturally upon bark, and owing to their small size require to be grown well up to the roof glass. Many of these are grown suspended from the roof, a strong wire being stretched along each side of the central path of the pits in which the plants are grown, and another beneath the apex. The plants are in quite various receptacles, in pans, baskets, on rafts, pieces of cork, and in some cases on natural bark, in most cases some fibre being attached in which the roots can work. This is, of course, an approximation to their natural habitat, and it is one of the features that give a distinct character to an Orchid house. In former times the practice was carried out to an even greater extent, in some cases the plants being suspended from suitable positions nearly all over the roof, but this cut off too much light from the plants beneath, which were also injured by the drip from those above.

Many of the plants are specially adapted for such a position, and can hardly be accommodated elsewhere, on account of their pendulous habit, for example Cattleya citrina, Epidendrum Parkinsonianum, Dendrobium teretifolium, Masdevallia deorsa, whose character is indicated by its name, and the very distinct Lycaste Dyeriana, with others too numerous to particularise. The plants are, of course, grown in their own appropriate department, warm, intermediate, or cool, so far as this is known, but in a few cases a suitable position has to be found by experiment. It is not only a suitable position with regard to temperature, but also with regard to light, that has to be found, for such a collection is very various in its requirements, and plants that are naturally shade-lovers seldom succeed in such positions. But for small species with fleshy leaves, as so many such plants have, the position is ideal, and a great variety of very diverse plants are grown with success, and interesting subjects are in bloom at all seasons of the year.

Many small species are also grown upon the stages, where positions can

be found sufficiently near to the roof-glass, and this more especially in the Cool house, where a number of small Masdevallias, Pleurothallis, and plants of similar requirements are grown. When in bloom they are brought out into a corresponding situation in one of the Show houses.

At the present time several of these interesting plants are in bloom or bud, including Angræcum Scottianum, with terete leaves and a greatly attenuated spur, Bulbophyllum barbigerum, with its feathery, mobile lip, the bright yellow Dendrobium aggregatum, plants of the charming little Promenæa xanthina, Maxillaria madida, a curious caulescent species, Megaclinium minutum and lutescens, Microstylis Thomassetii, a recent introduction from the Seychelles, the miniature Masdevallia simula, whose partridge-like flowers are hidden among the leaves, and others.

Many of the usual showy species are in bloom, including Dendrobium chrysotoxum and suavissimum, a good example of Epidendrum vitellinum, and the rare E. Harrisoniæ, the bright rose-purple Disa Luna, the distinct Polystachya paniculata, several Cypripediums, and an umber of Cattleyas, Læliocattleyas, Miltonias, and Odontiodas. The rare Cattleya Walkeriana is in bud, and a specimen of Cœlogyne Dayana is showing several spikes, and will soon form a graceful picture.

At the present time a number of hardy Orchids in the rock garden are showing for bloom, being scattered about here and there in suitable positions, and where somewhat later several of them will be conspicuous objects. Hardy Orchids have always been a feature of interest at Kew, where numerous species have flowered, though chalk-loving species fail to establish themselves, and a good many others have been introduced which vanish after flowering, owing to the difficulty of providing them with suitable positions. In this connection a note which appeared in the *Gardeners' Chronicle* as long ago as 1869 will be read with interest :—

"One of the prettiest and most interesting features of the Royal Gardens, Kew, at the present time is, and for the past few weeks has been, the collection of European terrestrial Orchids. The singularity of their form, and the brightness and odd distribution of their colour, render them always attractive, even to those who are not conversant with the romantic details of their life-history, as unfolded by Darwin and others. But among those now or recently in flower at Kew are some, such as Orchis romana and O. provincialis, which are remarkable for the peculiarly delicate primrose yellow of their bloom—a colour not often seen in terrestrial Orchids, and specially as a 'self' colour. Mr. Duncan, whose management of the alpine and herbaceous departments of the Royal Gardens entitles him to high praise, finds that he succeeds best with the plants when cultivated in pots, by allowing them to grow, as far as possible, amid grass or other herbage, as they would do under natural conditions. When the plants are

in bloom, and are brought to the front for inspection, a dressy appearance may readily be given them by removing or regulating the grass, so as to do away with any appearance of untidiness."

Coming down to the present day we find a number of species grown in suitable places on the rockwork, often with some dwarf-growing plant which covers the surface of the ground and affords protection when the Orchids are at rest. Under these conditions several interesting species maintain their ground, and a few thrive exceedingly and are quite imposing when in bloom during May and June. On a western slope near the top of the rockwork a good clump of Cypripedium macranthum has maintained its position for years, and at present a number are in bud, with several of the chaste variety album, which has been described as one of the gems of the collection. In another spot are several plants of Orchis militaris growing among dwarf Saxifrages, and one showing for bloom. Not far away is a little clump of Gymnadenia conopsea throwing up two or three spikes. Three plants of the bright purple Orchis laxiflora are also blooming, and make a bright show when fully expanded. Chalk-loving species are hardly represented, but the Spider Orchid, Ophrys aranifera, succeeds in a bed of limestone that was made several years ago, and has bloomed annually since. With it are associated some plants of Edelweiss.

Orchis maculata thrives in a variety of situations; in a bed of Sempervivum, in one of Bulbinella, which it closely resembles in habit, and among Saxifrages, and other dwarf-growing plants. This species is quite attractive before the flowers expand, the leaves being transversely barred with dark brown. In a nearly white variety, however, the blotches are rather obscure, a character obviously correlated with the markings of the flowers, which are reduced to small pale pink dots. It is believed that O. maculata reproduces itself here from seed, for spikes sometimes appear among dwarf-growing plants where no bulb was planted. Seed pods are frequently produced, and it is believed that the seeds germinate in suitable situations and are not observed until they bloom. The idea might be of service in trying to raise hybrid seedlings, which are notoriously difficult to germinate.

The plant sometimes known as Orchis maculata superba, here labelled O. latifolia × maculata, on account of its believed hybrid origin, is represented by numerous strong examples. It is an imposing plant when seen in full bloom and some two feet or more high, for the leaves are handsomely blotched, and the large, bright purple flowers are borne in long, dense spikes. It has long been known in gardens, and was probably picked up somewhere as a wild plant, for the hybrid has been recorded from several localities where O. latifolia and maculata grow intermixed. It has also been described as O. Braunii, Halacsy, and its history has already been

given (*O. R.*, xxi. pp. 201-202), and a figure (xxiii. pp. 367-368, fig. 45). We are inclined to think that what is sometimes known as O. latifolia with spotted leaves may also be a form of the same hybrid. At all events there is a broad-leaved species with unspotted leaves, which is represented by two good clumps, one of them growing in a clump of a Gentian, which its leaves very closely resemble. The flowers are large, bright purple, and are borne in long spikes. Lastly, we must mention a large clump of the Madeiran O. foliosa at the south end of the rockwork, which always blooms well. This is most allied to the green-leaved O. latifolia, and may be regarded as an outlying geographical representative of it, with broader leaves, shorter scapes, and rather large, bright purple flowers. It makes a fine effect when a good number of plants are seen in bloom together.

Many attempts have been made to establish some of the South European species, Serapias, Ophrys, and others, but they generally disappear after flowering. The cause may be the absense of chalk from the soil or unsuitable conditions of light and shade. It may also be partly due to unsuitable winter treatment, or that some of the species are not quite hardy so far north, but whatever the cause, the result is disappointing. The latter difficulty might be partly got over by growing the plants in cold frames, but here also the species have a habit of disappearing. A good collection of the numerous and varied European Orchids would be a specially interesting feature of such a collection.

ORCHID IMPORTING.

TWO interesting letters on the subject of Orchid importing have just reached us, one correspondent recalling the time when importations abounded, and novelties or rare species could be picked up almost at will. He wonders if these golden days will ever be seen again. No one can tell, but when normal times return we expect to see a resumption of some of the old-time activities, though probably in a modified form. Conditions are perpetually changing, and the enormous development of hybridisation during recent years is altering the character of our collections. Novelties are now looked for from the hands of the hybridist, and their enhanced decorative value cannot be called in question, though there is a tendency to sameness in some of the groups, and there is room in our collections for some of the exquisite and marvellously diversified productions of nature, which only require suitable treatment in order to reveal their true character. A history of Orchid importing would provide some interesting chapters, and some of its developments were briefly touched upon by

Sir Trevor Lawrence, Bart., in his opening address at the Orchid Conference held at South Kensington in 1885. He remarked :—

"In former years collectors were sent out by wealthy amateurs, gentlemen who desired to adorn their gardens with new plants, new flowers—gentlemen such as the Duke of Devonshire, the Duke of Northumberland, and other persons occupying similar positions. Of course the Royal Horticultural Society did a great deal of good work by employing very enterprising, skilful collectors. All this, so far as private people are concerned, has come to an end, and I think, perhaps, on the whole, it is to the advantage of the cultivation of Orchids that this matter should have passed into the hands of business people who collect Orchids as a matter of commerce. In referring to that for one moment one would not do justice to several of the persons to whom we owe so many of the beautiful species, if we were not to pay some personal tribute to them. The firm of Messrs. Hugh Low & Co. have for many years devoted themselves, their capital and enterprise, in this direction. Then there are Messrs. James Veitch & Sons, Messrs. B. S. Williams & Son, Mr. William Bull, and Messrs. Backhouse. Many other firms have in years past devoted a good deal of enterprise to this matter. I must allude to the great energy and enterprise which have been displayed for many years by Mr. F. Sander, of St. Albans, and his collectors. They have added to these qualities conspicuous skill and success in collecting and importing Orchids, the results of intelligent care and observation, and of long and varied experience. Mr. Sander has largely added to the genera and species of Orchids in cultivation, and among his introductions have been many novelties of great merit.

"I have a list of the countries that have been covered by the collectors of one firm only. These are—the Argentine Republic, Borneo, Brazil, Guiana, Ceylon, Costa Rica, Ecuador, Guatemala, British Honduras, British India, Upper Burma, Jamaica, Java, Labuan, Madagascar, Mexico, Celebes, Uruguay, Nicaragua, Panama, Malay Peninsula, Singapore, Philippine Islands, Trinidad, San Salvador, United States of Colombia, and Venezuela. This shows at all events that there has been no want of very wide travel on the part of the collectors, and perhaps it may lead some people to suppose that we have very nearly collected all the Orchids we are likely to get. I do not think this is the case. In regard to one Orchid, one of the principal importers of plants told me his collectors had been searching for it for many years, although it was known about where it grew. I refer to the Odontoglossum nævium majus. Perhaps some day it may be found in profusion.

"There is another curious circumstance with which I think the industry of collectors is making us better and better acquainted. There exist

albinos in some of the principal genera of Orchids, such as Cattleya and Dendrobium, and this shows the contraritey of human nature in regard to these genera. We search and endeavour to secure albinos, and when we have flowers which are white we search and endeavour to secure coloured varieties."

HYBRID OPHRYSES.

SOME additional seedling Ophryses have been sent by M. Fernand Denis, Balaruc-les-Bains, France (see pp. 82-83), namely two obtained by self-fertilisation of O. arachnitiformis, and two others from O. Speculum × bombyliflora. Somewhat later came examples of two interesting wild plants.

O. ARACHNITIFORMIS, Gren. and Phil., was described in 1860, and is regarded as a subspecies of O. aranifera by M. Camus, who cites O. aranifera var. nicæensis, Barla (*Orch. Alpes-marit.*, p. 66, t, 54, fig. 12-23), as synonymous. The strong purple suffusion in the sepals and petals, however, suggests the influence of some purple-flowered species. M. Denis remarks: "I self-fertilised flowers of O. arachnitiformis, and sowed the seeds 3½ years ago. I have now a dozen seedlings in bloom, which with slight variations may be said to reproduce the mother plant. I send two of the scapes." The sepals and petals are oblong and somewhat elongated, the sepals with a light purple suffusion on either side of the central nerve. In one the lip is brown, with a large white marking in the centre, much like that of O. aranifera. In the second the lip has a broad green margin, and there is a brown band between the two nearly parallel white lines.

The cross O. Speculum × bombyliflora seems to be new, at all events it is not enumerated by M. Camus, hence we suggest for it the name O. FERNANDII, Rolfe. Two forms are sent, which vary somewhat, but both have the general shape of O. bombyliflora, especially in the lip, but all the parts are modified in structure and colour. The first has green sepals and petals, with a tinge of purple at the base, and the lip is three-lobed, the greater part brown, paler at the margin, and with some irregular whitish lines on the disc; and a small yellow area on the side lobes. The other has more purple in the segments, and a smaller, more entire lip, on which the whitish lines are limited to a short pair at the base, the prevailing colour being brown with some yellow on either side of the disc.

The later sending contains what M. Denis thinks must be a natural hybrid between Ophrys aranifera and arachnites. It was found near Martigues, Bouches du Rhone, S. France, where he also found O. aranifera.

O. arachnites, and rare examples of O. lutea and O. arachnitiformis. We indentify it with a plant described in 1887 as O. Aschersonii, Nant. (*Bull. Soc. Bot. France*, xxxiv, p. 423), as a hybrid between the species named, that had been found in the villages of Vaux and Champagne, near Isle-Adam (north of Paris), by P. Bergon. It had previously been found in Germany, and had been referred to O. arachnitiformis, but M. de Nanteuil considered it different, and doubted whether the latter was of hybrid origin. This is the plant figured as O. arachnitiformis by Ascherson (*Berl. Monatschr.*, 1878, pp. 457-459, t. 6), flowers of the two supposed parents, O. aranifera and O. arachnites, being also included. It was found near Jena, Germany, in May of the previous year, and this plant may be regarded as the original of O. Aschersonii, Nant. The sepals and petals are pale green, the latter narrow and elongated, and the lip combines well the characters of the two parents.

Lastly, there is a plant of O. Bertolonii with three bulbs, which was collected at Port de Bouc, Bouches du Rhone, and M. Denis remarks that it is the first time he has seen this anomaly, which must be rare. He adds that O. Bertolonii is abundant in this locality, mixed with O. lutea, O. aranifera, and a very few O. arachnitiformis.

We note with pleasure that M. Denis is continuing his very instructive experiments, and he hopes to be able to send us further examples. R.A.R.

ONCIDIUM LURIDUM FROM PANAMA.—We have received for determination from Mr. C. W. Powell, Balboa, Canal Zone, Panama, a sketch of an Oncidium, which we think belongs to O. luridum, Lindl. Part of the inflorescence was sent separately, but the packet, unfortunately, arrived broken and without contents, so that we cannot be certain of the determin ation. The sketch with the flowers would have been ample. but without them the necessary details are missing. Mr. Powell compares the plant with O. Lanceanum, but the inflorescence is much-branched, arching, four feet long, and bore 93 flowers. The flowers differ from O. Lanceanum in shape, and the sepals and petals are described as barred and dotted with rosy-brown, the lip still more dotted, and the crest of the lip deep rose-purple with yellow teeth. The column is yellow, and the anther cap pale rose, yellow at the base, and with violet awns. So far as the sketch goes, in the absence of flowers, it might be O. carthaginense, Jacq., but we have as yet no evidence that that species occurs in Panama, and we chiefly favour O. luridum because some years ago Messrs Sander sent to Kew a specimen which was said to have been received from Panama with O. ampliatum, and this proved to be O. luridum, which extended the area of the species. Perhaps Mr. Powell will be able to complete the specimen later. It would be interesting to know more of the Orchids of Panama.—R.A.R.

CATTLEYA SCHŒDERÆ.

CATTLEYA SCHRŒDERÆ is a very fine species of the labiata group which at one time was ranked as a variety of C. Trianæ, but its introduction in quantity from a different locality led to a recognition of its distinctness. Its lighter colour, delightful heliotrope fragrance, and rather

Fig. 11. CATTLEYA SCHRŒDERÆ.

later time of flowering, are among its more essential differences. The accompanying figure which represents a particularly fine specimen, was grown and photographed by Mr. A. Herrington, Madison, New Jersey, U. S. A., and shows a plant in a six-inch basket bearing three spikes, of five, six, and seven flowers, the latter number being somewhat unusual. It represents a fine specimen of sucessful culture, and its general character is

well shown in the illustration. The species has been extensively used for hybridising, it having been united with most of the other species of the labiata group, with several of the long-bulbed diphyllous species, with over a dozen Lælias, with Brassovala Digbyana, glauca and nodosa, and with Sophronites grandiflora, also with numerous Læliocattleyas and other hybrids, so that its progeny consists of a very diverse family.

Cattleya Thayeriana, a bloom of which is here figured, represents a

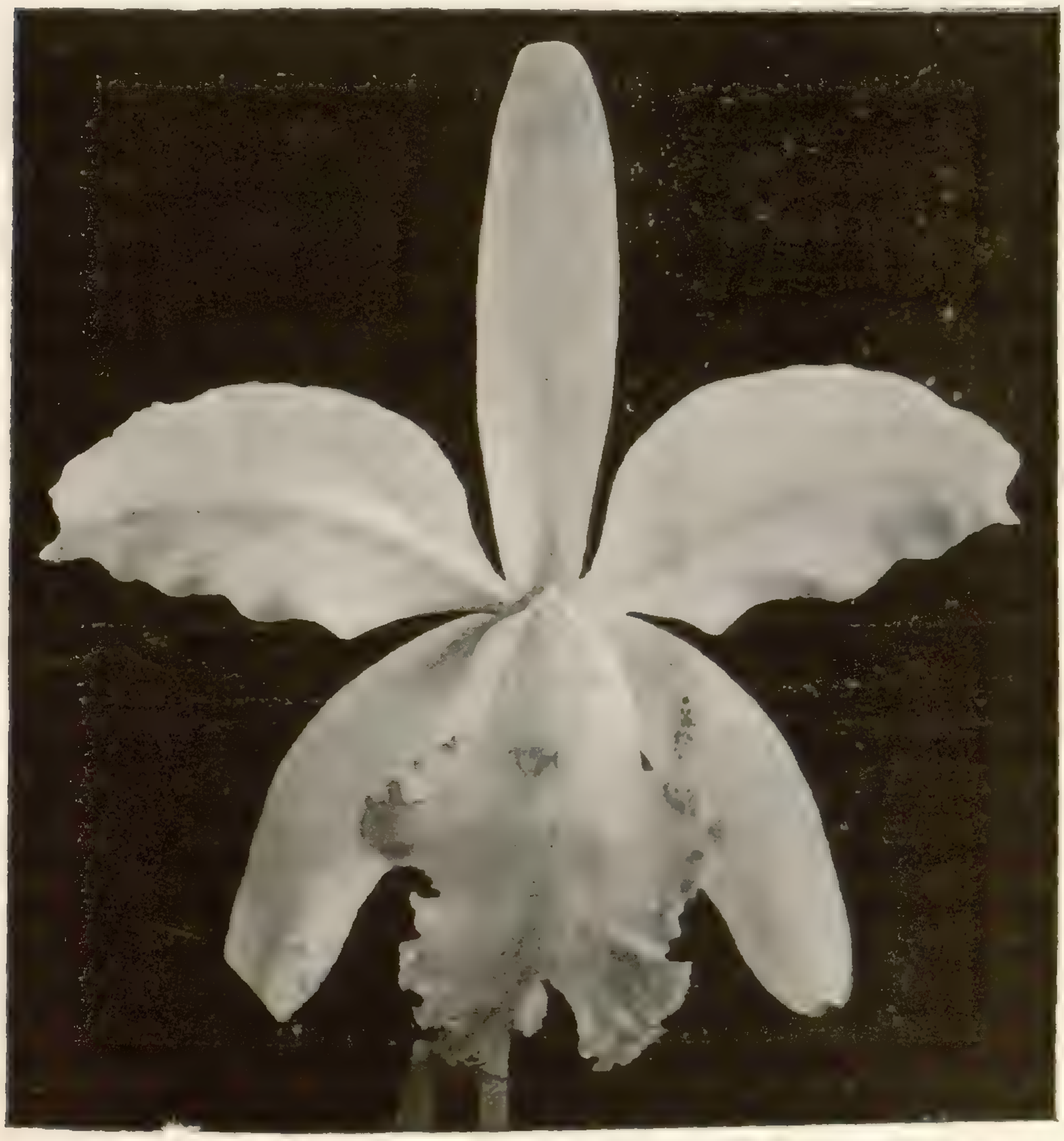

Fig. 12. Cattleya Thayeriana.

combination between C. Schrœderæ alba and C. intermedia, the latter being the seed bearer, and well combines the characters of the two parents. It was raised by Mr. E. O. Orpet, S. Lancaster, Mass., U.S.A., the seed being sown in April, 1907, and three years later the first seedling was in bloom. Mr. Orpet then remarked that the colour was delicate pink throughout, the tube of the lip being primrose yellow, with a purple irregular blotch in the centre. Three years later a batch of seventy plants was in bloom, and Mr. Orpet wrote: "When a quantity of plants result from a cross between distinct sections of the genus, it is a most wonderful

revelation to the observer to see the great divergence in form and colouring, This is remarked by all who have seen our seventy plants of C. Thayeriana in bloom. The parents were C. intermedia × C. Schrœderæ alba, and about three-fourths of the plants produce flowers of a lovely uniform lilac with no accentuation on the apex of the lip. In the balance there are varying degrees of amethystine marking, from the smallest dash of colour, as in the type plant, to heavy inverted V-shaped masses of colour. This has led many to remark that no one would credit their common origin were it not well authenticated. There is also a similar variation in the shape of the labellum. Many are distinctly three-lobed, while three others are as finely rounded as any C. Schrœderæ. In some the side lobes do not fold over the column, but only meet at the base; others overlap nearly their whole length. Last March we had over 200 expanded flowers of C. Thayeriana, and as by actual test it lasts longer in perfection than any other Cattleya known here, a fine opportunity was enjoyed during the six weeks for study and comparison." This amount of variation is more often seen among secondary hybrids, but the range of colour would naturally be increased by the fact that one of the parents was an albino. The figure represents one of the first seedlings to open, and is fairly intermediate between the two parents.

THE GENUS EPIPHORA.

POLYSTACHYA pubescens, Rchb. f., is a pretty little South African Orchid which is frequently seen in flower at Kew, and is well figured at t. 5586 of the *Botanical Magazine*. It was originally described under the name of Epiphora pubescens, by Lindley (*Comp. Bot. Mag.*, ii. p. 201), being based on dried specimens collected in the Kaffir Country by Burchell. Lindley seems to have been rather puzzled as to its affinities, and remarked: "I hardly know where to station this very distinct genus. Its habit is that of Polystachya, but it belongs to Vandeæ." Afterwards, when it flowered with Messrs. Loddiges, who had introduced tt from Delagoa Bay, he remarked: "It approaches very near to the genus Polystachya, next to which, among Vandeæ, it must be placed in any future arrangement" (*Bot. Reg.*, 1840, Misc. p. 49). Reichenbach afterwards transferred it to Polystachya, where it has since remained by common consent. The question of its distinctness has again been raised by Finet, who has described two new species of Epiphora from Tropical Africa, E. Pobeguinii and E. saccata, and the flowering of the former, both at Kew and at Glasnevin, has furnished an opportunity for examining the characters. We fail, however, to find any essential difference from Polystachya, in fact the new species are very distinct from the original South African one, and much nearer to others

placed in the polymorphic genus Polystachya, to which we believe they must be transferred. The species are as follows:—

POLYSTACHYA POBEGUINII, Rolfe. Epiphora Pobeguinii, Finet, in *Lecomte Notul. Syst.*, ii. p. 29, fig. 1-12.—Found on the plateau of Ninkan and at Labe, French Guinea, by Pobeguin, and flowered at Paris. It is a very pretty little plant, bearing an erect raceme of numerous, light rose-purple flowers, with a bright yellow, very hairy crest on the disc of the erect, strongly recurved lip. The front lobe of the lip is rather darker purple.

POLYSTACHYA SACCATA, Rolfe.—Epiphora saccata, Finet, *l. c.* pp. 29-30, fig. 13-21. Found at Pita, French Guinea, by Pobeguin, and at present only known from a dried inflorescence. The colour is not stated, but the front lobe of the lip is strongly saccate, hence the name. R.A.R.

BULBOPHYLLUM NUDIFLORUM, Rolfe.—A species with much elongated scape has appeared in more than one collection under the name of Bulbophyllum saltatorium. The latter has scapes not exceeding the leaves in length, while in B. nudiflorum they are several times as long. Both are Tropical African, and have feathery lips, and thus belong to the B. batbigerum group.—R.A.R.

DENDROBIUM TORTILE IN PENANG.—It is interesting to record that this well-known Burmese Dendrobium has now been found in Penang. Writing to Mr. H. N. Ridley, late Director of the Singapore Botanic Garden, Mr. Mohammed Haniff, Waterfall Gardens, Penang, remarks that at Bulak Pulau, "on a Durian tree, I found a large clump of Dendrobium tortile which could only be found in Kopah and Burma. This is the first record that this Dendrobium is found here. I could only manage to get half of it for my man to carry; there is now remaining the other half on the tree." The species was originally discovered in the Mergui district by Thomas Lobb, when collecting for Messrs. James Veitch & Sons, and was afterwards found in the Arracan Hills, but this is the first record that we know of as to its occurrence in the Malay Peninsula. Mr. Ridley informs us that Bulak Pulau may be regarded as an absolutely wild locality, and assuming the determination to be correct, it marks a considerable extension of its area. A figure of the species is given at page 201 of our eighth volume. There are some interesting questions connected with the Orchids of the Malay Peninsula. Cypripedium superbiens was originally found on Mt. Ophir, Malacca, by Lobb, and Mr. Ridley remarks that the plant seems never to have been found on Mt. Ophir again. It came with a lot of C. barbatum, and should be looked for again. It is also interesting to note that the Bornean C. Lowii has been found by Curtis at The Gap, Pahang Track, Selangor, and there are also records from Sumatra and the Sulu Archipelago.—R.A.R.

CALENDAR OF OPERATIONS FOR MAY.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

IT is a great pleasure to the cultivator at the present time to notice how quickly the plants have responded to the increased light and sun heat which they have experienced during the past few weeks. Plants in each division are now growing freely, and every inducement should be given them to build up strong healthy pseudobulbs. The temperatures for the next few months should be raised a few degrees in each department, and during bright weather will attain the maximum for the year, which is to the benefit of the warmer divisions. Cool house Orchids, however, are soon injured by excessive heat, and during hot weather must be kept as cool as possible, by the use of a great amount of humidity in the atmosphere.

ATMOSPHERIC MOISTURE.—The advancing power of the sun and the general increase in temperature necessitates the use of more moisture in the houses, both to keep the plants in a healthy and growing condition, and also as a preventative against insects. A hot dry atmosphere is a perfect Eldorado for the increase of these injurious pests. Unsuitable conditions of atmosphere, either too wet or too dry, bring their respective troubles, and a proper balance between heat and moisture must be maintained to secure the best results. Spraying and syringing may be indulged in frequently on fine bright days, but only soft tepid water should be used for this purpose. On cold damp days it may be omitted.

WATERING must be done at all times with care, as the state of each individual plant, whether growing actively or not, must be taken into consideration, The danger of overwatering is hardly present when the compost is full of roots and the plant is in active growth, but at other times an excess of water has the effect of killing the roots. On the other hand, an inadequate supply of water is a hindrance to free growth.

VENTILATION.—During excessively hot weather the ventilation of the Cool house will need considerable attention, as the humidity of the atmosphere must be maintained, so as to keep the temperature at the lowest point possible. The ventilation of the other houses must be arranged so that the plants may receive at all times a continual supply of fresh air, without causing draughts, which no plant can thrive in. The bottom ventilators of the houses may be left partially or wide open at night, according to circumstances, thereby providing a sweet and healthy atmosphere at all times. This question of atmosphere deserves the attention of everyone engaged in the cultivation of Orchids. In nature these plants enjoy the blessings of fresh air, and in the artificial means at our disposal

we should as far as possible try to satisfy their requirements in this respect.

SHADING will now be general, and require much attention, as the blinds should only be let down when necessary. On the other hand the sun must not be allowed to shine directly on the plants when there is a danger of the foliage suffering. Some Orchids are naturally shade-lovers, and it is pitiful to see a shade-loving plant exposed to the sun's rays, if only for a few minutes. These matters may appear trivial, but they are essential if the best results are to be attained. Nature in every case is good to those who are good to her, and whatever pains or trouble we bestow on ascertaining the requirements of the respective plants under our care, the better and greater will be our reward.

SUMMER QUARTERS.—Towards the end of the month all those plants which delight in an equable temperature the whole year round, should be removed from the Intermediate house, where they have passed the winter, to the Cool house, where they may remain for the next few months. There are several species of Lælia, Dendrobium, Miltonia, Odontoglossum, and Masdevallia, which thrive under this treatment. After removal it is desirable to keep the plants for some little time a trifle drier at the roots than they have been in the warmer division.

ANGULOAS.—In the Cool house the various Anguloas are making new growth, and pushing up their flower spikes. When their flowering period has passed they may have attention as regards repotting, should they require it. They will succeed planted in a well-drained compost of clean fibre, such as that used for Lycastes. When repotting, keep the base of the young growths on a level with the rim of the pot, and place the material quite firmly around each plant. Water carefully until the new roots get fairly into action.

LYCASTES are now in bloom, and when their flowers have passed over, any necessary repotting may have attention. These plants enjoy a considerable amount of loam fibre in the compost, and a suitable material is one similar to that used for green-leaved Cypripediums.

CATTLEYAS AND ALLIES.—The spring-flowering section will now be pushing up their flowers within the sheaths, and it is advisable to place the plants where they may receive abundance of light and air on all favourable occasions. When in bloom the plants may be kept slightly drier at the roots, and the atmosphere slightly cooler and drier, which will be the means of the flowers lasting longer in perfection. The repotting of plants which have bloomed, and are beginning to push roots at the base of the pseudo-bulbs, should have attention whenever it becomes necessary. C. Warscewiczii (gigas), C. Dowiana and its variety aurea, with several of their hybrids, are now forming their new growths, and should be placed well up to the roof glass, where they may receive plenty of light and air.

Although the plants may appear to be growing strongly, care should be exercised in watering, as an excess at this stage may be the cause of much harm. C. Trianæ, C. Schrœderæ, with many hybrid Cattleyas, Læliocattleyas, Brassocattleyas, and allied subjects, that have recently passed out of flower, may have attention as regards repotting whenever they commence to make new roots. Any plants of C. Mossiæ and Mendelii which have failed to produce flower sheaths may be repotted when they are about to push new roots. Those which have deteriorated through loss of roots or or other causes, will also begin to make fresh roots at this season, and may be repotted into small receptacles and started afresh. The pots should be well drained, and a well-cleaned compost of A1 fibre will answer the requirements of the plants.

SOPHRONITIS GRANDIFLORA and its hybrids may be treated in precisely the same manner as Cattleyas when fresh rooting materials are required, but, owing to their dwarfer nature, must be placed in smaller receptacles, and the potting materials pulled into much smaller pieces.

ODONTOGLOSSUMS.—Plants of O. Rossii, Cervantesii, Humeanum, Œrstedii, and other Mexican Odontoglossums, that have recently passed out of flower, will now require a rest, and should be suspended close to the roof glass, and be afforded only sufficient water to prevent the pseudobulbs and leaves from shrivelling. An excess of water whilst the plants are at rest will cause the roots to decay. It is difficult to determine the amount of rest each plant requires, but they will resume growth, each in its proper season, and then each plant requires individual attention. The Columbian Odontoglossums will now be blooming freely.

PHALÆNOPSIS.—Although not grown at the present day to the same extent as formerly, Phalænopsis are most desirable Orchids, and require a shady position in the warmest house. After flowering, they should be induced to take a short rest, but must not be allowed to suffer for the want of moisture, either in the atmosphere or at the roots. When they commence to make new leaves and roots is the proper season to afford new rooting material.

DENDROBIUM PHALÆNOPSIS will by this have commenced to grow, and will quickly push new roots from the base of the new shoots, therefore before these roots make much progress, any necessary repotting should be taken in hand. These plants should be placed in the smallest receptacles possible, and be afforded a light position in the warmest house. They will also succeed grown suspended in a Croton stove. In repotting any of this section of Dendrobiums the material should be placed quite firmly around the base of the plants. Other Dendrobiums that require similar attention at this season are the tall growing D. Dalhousieanum, moschatum, fimbriatum, clavatum, &c.

CYMBIDIUMS.—As these plants pass out of flower, they may have attention as regards any necessary repotting. Being plants which resent root disturbance, they should not be repotted unless really necessary owing to the compost becoming sour and decomposed. The plants bloom more freely and produce finer flowers when the pots are well filled with roots. They require plenty of drainage, with a compost in which good yellow loam fibre predominates, with sufficient finely broken crocks added to keep the whole open. A shady position in a cool Intermediate house, with plenty of fresh air, answers their requirements, but they resent strong sunshine at all seasons.

GENERAL REMARKS.—Once again, owing to circumstances over which we as horticulturists have no control, we shall miss what had become to many an annual reunion of kindred spirits. The big shows are in abeyance, and the younger generation are away, bravely and nobly upholding the country's honour, but to them we may say, in the beautiful words of our loved Queen, "Our pride in you is immeasurable, our hope unbounded, our trust absolute." And while they are showing such devotion, may we, who are carrying on at home, be able to show that our good old profession has not stood still.

CŒLOGYNE INTEGERRIMA, Ames.—This very distinct Philippine Cœlogyne has been for some time in cultivation, having been exhibited more than once by Messrs. Sander & Sons, St. Albans, and it has also flowered at Kew and Glasnevin. It was described in 1909 by Mr. Oakes Ames (*Philipp. Journ. Sci.*, iv. p. 665) from materials collected by E. D. Merrill, at Mt. Pulog, in the Province of Benguet, N. Luzon, in the lower mossy forest, at some 2,000 metres elevation, the flowers being described as greenish yellow. Mr. Ames remarked: "Cœlogyne integerrima belongs to the section Carinatæ, and appears to be closely allied to C. cinnamomea from which it differs in its larger flowers and entire labellum. The leaves are much broader in relation to their length than those of C. cinnamomea. The labellum is entire, without lobes. The keels on the disc are smooth and extend from the base to the tip, the lateral ones being more prominent near the middle." It was collected many years earlier by Loher in the Province of Benguet, the specimen being preserved at Kew, but it was not described. The flowers are borne in arching racemes of about eight to twelve, and the segments are about an inch long, and the colour light green with about four broad brown bands on the lip. We do not know when it was introduced, but it was exhibited by Messrs. Sander at the Chelsea Show in 1913, as recorded at page 171 of our twenty-first volume. It is a very distinct species.—R.A.R.

LYCASTE BREVISPATHA.

LYCASTE brevispatha is one of the smaller species of the L. macrophylla group, and the plant here figured is an unusually dwarf form which flowered in the collection of the late Frau Ida Brandt, of Zurich. The species is a native of Venezuela, and has been known in cultivation for a great many years, but never seems to have been common. It varies considerably in colour, and the plant known as L. Lawrenceana, which flowered in the collection of Mrs. Lawrence, of Ealing Park, is a form of the same. The general character of the flowers are seen in the illustration,

Fig. 13. LYCASTE BREVISPATHA.

and we may add that the sepals are green with numerous red-brown blotches, and the petals and lip white, blotched with bright rose, giving an unusually attractive appearance in a well-grown specimen. There is also a form of the species in which the rosy blotches are quite absent, and which bears the name of L. candida. This was confused by Lindley with L. leucantha, Klotzsch, a confusion that was pointed out by Reichenbach. Of this the locality is said to have been Costa Rica, but comparatively little is known about the geographical distribution of the species. It is a very pretty little plant, and of the easiest possible culture, and deserves to be better known in gardens.

SOCIETIES.

ROYAL HORTICULTURAL.

THE ordinary fortnightly meeting was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on April 9th, when there was a moderate display of Orchids, and the awards consisted of three medals, three Awards of Merit, and two Preliminary Commendations.

Orchid Committee present: Sir Jeremiah Colman (in the chair), J. O'Brien (hon. sec.), F. J. Hanbury, J. Wilson Potter, Pantia Ralli, E. R. Ashton, F. K. Sander, Arthur Dye, J. Charlesworth, S. W. Flory, C. J. Lucas, W. H. Hatcher, W. J. Kaye, Walter Cobb, R. A. Rolfe, and R. Brooman White.

AWARDS OF MERIT.

ODONTIODA ERNESTII (Odm. Wilckeanum × Oda. Charlesworthii).—A distinct hybrid, with flowers of good shape, and the ground colour buff yellow, with numerous dark red blotches on the sepals and petals, and larger ones on the lip in front of the spiny yellow crest. Exhibited by E. R. Ashton, Esq., Cambridge Park, Tunbridge Wells.

ODONTOGLOSSUM CRISPUM OAKWOOD TRIUMPH.—A brilliant variety raised from O. crispum Phœbe and O. c. Leonard Perfect. The flowers are very large and round, thus recalling the latter in shape, and the blotches are rich ruby-red, and cover the inner two-thirds of the sepals and petals, leaving a broad white margin and apex, while the apex of the lip is white, with chestnut-red blotches in front of the yellow crest. Exhibited by Mrs. Norman Cookson, Oakwood, Wylam-on-Tyne (gr. Mr. H. J. Chapman).

ODONTOGLOSSUM JASPER VAR. ROEHAMPTON (amabile × crispum).—A handsome variety, with large and finely-shaped flowers, very heavily blotched with dark claret red on a light rosy-mauve ground; the lip also bearing numerous blotches round the yellow crest. The raceme bore eleven flowers. Exhibited by Dr. Miguel Lacroze, Roehampton (Orchid-grower Miss Robertson).

PRELIMINARY COMMENDATIONS.

ODONTOGLOSSUM AMAZON (crispum × mirum).—A promising seedling, the flower being large and of excellent shape, with clusters of ruby-red blotches. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM CRISPUM THE PRESIDENT.—A very fine unblotched seedling of exceptional shape, with a rosy suffusion in the sepals. Exhibited by Messrs. Charlesworth & Co.

GENERAL EXHIBITS.

Mrs. Ogilvie, the Shrubbery, Oxford (gr. Mr. W. Balmforth), staged a

small select group, including the handsome Miltonia Hyeana F. M. Ogilvie white with a large maroon blotch on the disc, Odontoglossum Harwocdii Shrubbery var. with five flowers, the handsome Brassocattleya Cliftonii magnifica, and the charming white Bc. Bradshawiæ.

H. T. Pitt Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed Cymbidium Lowgrinum Rosslyn var., a dark-coloured variety.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a fine group, largely consisting of Odontiodas and Odontoglossums, and including good examples of Odontoglossum ardentillus Orchidhurst var., bearing a spike of thirteen handsomely-blotched flowers, O. Adonis (Jasper × Mars), a promising novelty having lilac-coloured flowers, with the inner three-fourths of the segments claret-red, the pure white O. eximium xanthotes and O. promerens xanthotes, O. crispum Admiral Beatty and memoria Lord Kitchener, two blotched forms raised in the collection, examples of Cypripedium Holdenii and the rare C. Druryi, a fine Læliocattleya Sylvia, a well-bloomed Dendrobium Sybil, Cymbidium Lowgrinum with two racemes, several good Miltonias and others (Silver Flora Medal).

Messrs. Charlesworth & Co., Haywards Heath, staged a good group, including a fine example of Læliocattleya Britannia, Odontonia Magali-Sander var. xanthotes, cream with yellow markings, and some well-grown examples of Odontoglossum eximium xanthotes and some blotched hybrids, Chysis bractescens, Odontiodas Bradshawiæ, Charlesworthii, Sanderæ, Joan and Royal-Gem, Miltonia Bleuana, a fine Læliocattleya Britannia var. Melanie, Sophrocatlælia Meuse, a fine example of Polystachya paniculata, and others (Silver Banksian Medal).

Messrs. C. F. Waters & Co., Balcombe, staged a good group of Dendrobiums, including examples of D. burfordiense, D. Rolfeæ and a pretty hybrid between it and D. Salteri, rather darker in colour, with examples of D. nobile Cooksonianum, virginale, and various others Silver Banksian Medal).

At the meeting held on April 23rd there was a larger display, and the awards consisted of one First-class Certificate, one Award of Merit, two Preliminary Commendations, and five medals.

Orchid Committee present: Sir Jeremiah Colman, Bart., (in the chair), J. O'Brien (hon. sec.), R. A. Rolfe, R. G. Thwaites, F. K. Sander, T. Armstrong, A. McBean, J. Charlesworth, J. E. Shill, W. H. White, Walter Cobb, F. J. Hanbury, C. J. Lucas, R. Brooman White, Sir Harry J. Veitch, and W. J. Kaye.

FIRST-CLASS CERTIFICATE.

BRASSOCATTLEYA PRINCESS-MARY (Bc. langleyensis × C. chocoensis alba).—A very beautiful variety, having much of the character of the

Cattleya parent, but the flower larger, and the broad segments white, with a bright yellow throat to the lip. Exhibited by Messrs. Flory & Black.

AWARD OF MERIT.

ODONTIODA JOAN VAR. ROEHAMPTON (Oda. Charlesworthii × Odm. armainvillierense).—A brilliant variety, the flower being large and of excellent shape, and the colour rich claret, narrowly margined with white, and the crest yellow. Exhibited by Dr. Miguel Lacroze.

PRELIMINARY COMMENDATIONS.

ODONTOGLOSSUM GENERAL FOCH (Armstrongii × Colossus).—A brilliant seedling, the flower being very large and of excellent shape. The ground colour is white, with numerous violet blotches on the fringed petals and on the lip, while the sepals are largely monopolised by the latter colour. It should develop into a fine thing. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM MIGUELITO (Dora × Doris magnificum).—Another promising seedling, the flower being of fine shape and substance, and the colour claret, with a few white splashes and a narrow white margin. Exhibited by Dr. Miguel Lacroze.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), staged a fine group, to which a Silver Flora Medal was given. It contained a beautiful specimen of Miltonia vexillaria memoria G. D. Owen, bearing four spikes and an aggregate of seventeen flowers, Odontoglossum crispum Snow Queen, O. Oakwood Ruby, the fine O. Hallii King Edward VII., Dendrobium thyrsiflorum, Chondrorhyncha fimbriata, Bulbophyllum Lobbii, Cymbidium Lowgrinum, Cypripedium Ajax, and a few Cattleyas and Læliocattleyas.

Dr. Miguel Lacroze, Roehampton (gr. Miss Robertson), sent Odontoglossum Catamarca (sceptrum × Fascinator), a pretty yellow hybrid with numerous dark red spots, and Brassocattleya Beaumont (Bc. Cliftonii magnifica × C. Empress-Frederick), a charming blush-white flower with a light greenish yellow disc to the lip.

Mr. J. E. Shill, The Dell Gardens, Englefield Green, sent a fine plant of Odontioda Duchess, one of the O. Coronation set, bearing a panicle of large round flowers, heavily marked with scarlet-red, on a cream-white ground.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a very fine group, in which the Odontoglossum group was conspicuous, and included good forms of O. eximium xanthotes, O. Bullecourt, Jasper, Pescatorei, Victory, Conqueror, and others, a few good Miltonias vexillaria, St. Andre and Venus, examples of Odontioda Henryi, Gloss, rosefieldiensis, Aspasia, Bradshawiæ and Cooksoniæ, Læliocattleya Dominiana, Cypripedium

Lawrenceanum Hyeanum, the pretty little Bulbophyllum Sillemianum with two bright yellow flowers, and others (Silver Flora Medal).

Messrs. Charlesworth & Co., Haywards Heath, staged an excellent group, including good examples of Dendrobium infundibulum and D. Jamesianum, Læliocattleya bella with five handsome flowers, Lc. Clarice, three fine Odontoglossum crispum xanthotes, and several blotched hybrids, Odontioda Schrœderi, and other brilliant forms, Miltonia Bleuana, a few good Cattleyas, and others (Silver Flora Medal).

Messrs. Stuart Low & Co., Jarvisbrook, staged a brilliant little group, including the white Brassocattleya Veitchii Queen Alexandra, good examples of Læliocattleya Dominiana and eximia, Lc. Sextus (Lc. Feronia × C. Schrœderæ), blush-white with orange disc to the lip, Lc. Marco (Lc. Mena × C. Schrœderæ), a pretty cowslip-yellow hybrid, Lc. Moonbeam, Dominiana, and Ballii, Cymbidium Lowianum concolor, Diana, and I'Ansonii, Cattleya Schrœderæ Purity, Oncidium Gardneri and concolor, Odontioda Chantecler, Odontoglossum Royal-Purple, and others (Silver Banksian Medal).

Messrs. C. F. Walters, Balcombe, staged a small group of well-flowered Dendrobiums, including D. Ainsworthii and its fine variety Mrs. Haywood, D. Rolfeæ, several forms of D. nobile, two good Cymbidium insigne, Lælia Latona, Odontioda Bradshawiæ, and others (Silver Banksian Medal).

Messrs. Flory & Black, Slough, showed Cattleya Peter (Hardyana × Venus), a brilliant hybrid, most like the former, and having sepals and petals tinged with rose on a light ground, and the lip crimson, with yellow veining in the throat, and a yellow patch on either side.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on April 4th, when the members of Committee present were : Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Howes, A. J. Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (Secretary). There was a fine display of choice Orchids, a considerable number of which gained certificates.

FIRST-CLASS CERTIFICATES.

Læliocattleya West Point Rex (Lc. bletchleyensis × C. Empress-Frederick), Brassocattleya, Apollo Regina, Cattleya intertexta alba magnifica, Odontioda Red Cross var. exquisita, and O. Coronation West Point var; from S. Gratrix, Esq.

Odontioda mira (Oda. Bradshawiæ × Odm. mirum), the finest variety yet seen, the large flowers with brilliant crimson markings; from P. Smith. Esq. A Silver Medal was also awarded to this fine exhibit, a note of which appears on page 118.

AWARDS OF MERIT.

Odontoglossum crispum Lord Morley, O. Fascinator, and Lycaste Skinneri Fairy Gem; from S. Gratrix, Esq.

Læliocattleya Mrs. Temple Ashlands var., Brassocatlælia Joan (Bc. Mary Gratrix × C. Octave-Doin), and Brassocattleya langleyensis Warburtonii; from R. Ashworth, Esq.

Odontioda Brewii Highfield var: from Mr. W. Shackleton.

FIRST-CLASS AWARDS OF APPRECIATION.

Odontoglossum crispum Erin, O. eximium vars. Ivanhoe and Rubric; from S. Gratrix, Esq.

Odontioda leopardina (Odm. Vuylstekei × Oda. beechensis); from R. Ashworth, Esq.

CULTURAL CERTIFICATES.

To Mr. C. Branch, for Odontoglossum crispum Briseis, and O. percultum purpurescens.

Large Silver Medals were awarded to R. Ashworth, Esq., Newchurch (gr. Mr. S. Davenport), and to W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), for fine groups, in both cases the Odontoglossums being well represented.

Silver Medals were given to fine groups staged by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), and to Messrs. Cypher & Sons Cheltenham, the former being numerously represented in the award list.

Interesting exhibits were sent by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. J. N. Kinchin); the Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers); Messrs. Keeling & Sons, Bradford; Messrs. Charlesworth & Co., Haywards Heath; and Mr. W. Shackleton, Bradford.

At the meeting held on April 25th the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. J. Bolton, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, J. Lupton, D. McLeod, J. McNab, and H. Arthur (Secretary). Certificated Orchids were again numerous, and the quality excellent.

FIRST-CLASS CERTIFICATES.

Odontoglossum Crawshayanum magnificum (Harryanum × Hallii), Odontioda Juliet, O. Fire-Queen (Oda. Bradshawiæ × Odm. promerens); O. Bradshawiæ Fire King (C. Noetzliana × O. crispum): and O. Brewii nigra (Oda. Charlesworthii × Odm. Harryanum); from P. Smith, Esq.

Cattleya Tityus perfecta (Enid × Octave-Doin), and Odontoglossum ardentissimum Doris; from S. Gratrix, Esq.

Brassocatlælia Hon. Mrs. Wilson Ashlands var; from R. Ashworth, Esq.

AWARDS OF MERIT.

Odontioda St.-Teresa (Oda. Bradshawiæ × Odm. waltonense); from R. Ashworth, Esq.

Odontoglossum Conqueror (parentage unrecorded); from Messrs. Armstrong & Brown.

FIRST-CLASS AWARDS OF APPRECIATION.

Odontoglossum crispum Sir Douglas Haig, and O. General Petain; from R. Ashworth, Esq.

Odontoglossum promerens xanthotes, and O. crispum versicolor; from S. Gratrix, Esq.

Odontoglossum Colmars (Colossus × Mars); from P. Smith, Esq.

Odontoglossum Ardentillus (parentage unrecorded) and O. Adonis (Jasper × Mars); from Messrs. Armstrong & Brown.

FIRST-CLASS CULTURAL CERTIFICATES.

To Mr. C. Branch, for Odontoglossum crispum (fine form), O. c. xanthotes Walkeriæ, and Cattleya Tityus Osiris.

Large Silver Medals were awarded to R. Ashworth, Esq., Newchurch (gr. Mr. S. Davenport), and to W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), for very fine general groups, the Odontoglossum section being again well to the front.

Interesting exhibits were staged by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. J. N. Kinchin); S. Gratrix, Esq, Whalley Range (gr. Mr. J. Howes), and Messrs. Armstrong & Brown, Tunbridge Wells, all of which figure well in the award list.

The Annual General Meeting (to which all members are invited) will be held at 2.30 p.m. on May 9th, when the balance sheet will be submitted for approval, officers and Committee elected, Prizes presented to the sucessful competitors, alterations or additions to Rules (of which immediate notice should be given to the Secretary), and any other business transacted.

The Secretary will be pleased to receive offers of Prizes for competition during the coming session, so that same may be announced at the Annual Meeting.

ODONTIODAS FROM ASHTON-ON-MERSEY.—Two handsome Odontiodas have been sent from the collection of Philip Smith, Esq., Haddon House, Ashton-on-Mersey, by Mr. E. W. Thompson. O. mira (Oda. Bradshawiæ × Odm. mirum) is a magnificent thing, which received a First-class Certificate and a Silver Medal at the Manchester and North of England Orchid Society's meeting held on April 4th. It bore a spike of eleven flowers, the largest measuring over $3\frac{1}{2}$ inches from tip to tip of the petals, these being over $1\frac{3}{4}$ inches broad. The ground colour of the petals is cream yellow, with two zones of orange red, and a broad central line at the base, the broad, fringed margin being rosy lilac. The sepals are similar, except that the markings take the form of two great solid blotches, while the lip

has a large red blotch in front of the yellow crest, and some orange-red markings behind. It is a remarkable thing, with much of the Odontoglossum character except as regards colour. O. alborubra (Odm. crispum × Oda. Chantecler) is a new seedling flowering for the first time, the small plant bearing a spike of four well-shaped flowers. The sepals and petals may be described as solid ruby-red, with an ivory-white apex and narrow margin, and a few similar markings at the extreme base, while the broadly pandurate lip is light yellow, with some dark red markings round the yellow crest, the basal part of the lip strongly recalling Odontoglossum Pescatorei, and thus confirming the presence of that species in the Odontioda Chantecler parent. It should develop into a fine thing when the plant becomes strong. The presence of Odontoglossum crispum on both sides of the ancestry will of course be noticed.

MASDEVALLIA LIVINGSTONEANA,

WE have just received an enquiry respecting this interesting Panama Masdevallia, which, unfortunately, we have never seen. Mr. F. Sander writes: "It was discovered by Roezl in the late autumn of 1873, and the plants arrived nearly dead. A few, however, were alive, which I sold in Stevens' Rooms, I think as Masdevallia sp. The next time Roezl came home he brought flowers and plants. I remember him bringing them to our old nursery in George St., St. Albans, and we discussed the name, he suggesting M. Livingstoneana, in honour of Dr. Livingstone, whose body had just been brought home by Stanley. Roezl found the plant on the Isthmus, and we talked about it being the only hot-growing Masdevallia known. The plants probably soon died, but there are flowers in the Reichenbachian Herbarium."

The species was described by Reichenbach in 1874 (*Gard. Chron.*, 1874, ii. p. 322), the author remarking: "It was not a brilliant idea to devote such an insignificent Orchid to such a hero as was the lamented Dr. Livingstone. Yet it would be a sacrilege to take away what was given to him, and this is my reason for fulfilling M. Roezl's wish that I should describe the plant under this name. After all, the dark purplish brown eye-like spots at the base of the lateral sepals look nice enough, and contrast with the pallid greenish yellow and brown colours of the flowers. It was discovered at Panama by M. Roezl, and was sold lately at a sale at Mr. Stevens' Rooms."

A year later he added, (*Gard. Chron.*, 1875, ii. p. 290): "I have just the first two fresh flowers at hand. They are rather better than I had expected them to be. The tube is greenish yellow, the inferior of lateral sepals and the tails are dark violet. There is a yellow blotch at the base of each

inferior sepal, which gives a very striking appearance. The length of the tail is nearly that of half the tube, but it is rather different in each flower. The whole length of the perigone is about more than half an inch. The rather stately leaves are 4 to 5 inches long and ⅔ to ¾ wide. I have to thank Herr Hofgartner Kirchoff, of Doanneschingen, in Baden, for the fresh flowers. They come from the beautiful collection of the Prince Egon von Furstenberg."

In the absence of specimens it is difficult to suggest the affinity, but Reichenbach placed it in a section which he called Clausæ porrectæ, to which he subsequently added such diverse species as M. ionocharis, ophioglossa and nidifica, with a few others not yet known in cultivation, and we may add that in Miss Woolward's Masdevallia the species is referred to Pleurothallis, which we think cannot be correct. We have no record of a subsequent discovery, but as we have a correspondent in Panama we may yet be able to hear something of it. It would be comparatively easy to dry and send specimens of such Orchids as may be available, and such a collection might well contain a few interesting novelties, for there are localities on the Isthmus which have been very imperfectly explored.

R.A.R.

ORCHID NOTES AND NEWS.

MEETINGS of the Royal Horticultural Society at the London Scottish Drill Hall, Buckingham Gate, Westminster, have been fixed for May 9th, 23rd, and June 18th, the intervals being three weeks in both the latter cases. The Orchid Committee meets at 11.45. a.m.

The last meeting of the session and the Manchester and North of England Orchid Society, and the Annual General meeting, are fixed for May 9th, and the opening meeting of the new session for June 13th. The Committee meets at the Coal Exchange at noon, and the exhibits are open to the inspection of members and the public from 1 to 4 p.m.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

C. W. P.—The package duly arrived, but was badly broken and the contents missing. Perhaps further materials can be sent. In practice we find the most sucessful method is to press small specimens in a fold of blotting paper and enclose in an ordinary letter.

J. W.—Oncidium pumilum, Lindl., a Brazilian species.

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VOL. XXVI. JUNE, 1918. No. 306

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVI. JUNE, 1918. NO. 306.

ORCHIDS AT TUNBRIDGE WELLS.

EVIDENCE of the rapid improvement that is taking place in the Odontoglossum group is constantly seen at our horticultural meetings, and the extent to which hybridisation and the raising of seedlings is now carried on can be well realised by a visit to some of our leading Orchid establishments. The firm of Messrs. Armstrong & Brown, Tunbridge Wells, have taken a prominent part in this development, and we gladly accepted Mr. Armstrong's invitation to pay him a visit about the middle of May, knowing that the time would be well spent. There is always much of interest to see in such an establishment, and as its leading features have been already described (*O.R.*, xix. pp. 164-168), our notes are chiefly devoted to some of the more recent developments.

The Odontoglossum seedlings are in excellent condition, the foliage being clean and healthy, and the plants having that strong, healthy appearance that indicates perfect cultural conditions. Some of the larger seedlings were of remarkable vigour, the last-made bulbs being twice as large as the preceding ones. There were many in bloom, and still more in spike, and it was particularly interesting to see the great amount of variation among seedlings from the same capsule. A rigid selection is practised, only the finest forms being used as parents, and these of known ancestry as far as possible, the object being to create pedigree strains, both among the white and blotched forms, while colour development is aimed at by further crossing with the numerous brilliant Odontiodas now in existence.

Examples of all these developments were pointed out. The whites were represented by Odontoglossum crispum xanthotes, O. eximium xanthotes, and O. promerens xanthotes, the latter a fine batch of seedlings just beginning to flower, and from which much is expected. The seedlings, as in the case of albinos generally, could easily be picked out by their bright green colour. Odontoglossum Peerless is a good example of the blotched forms, the seedlings showing much variation in colour, but all are good in shape and substance. An analysis of the ancestry shows that it is composed of O. crispum, O. Pescatorei, and O. Harryanum, the two former coming in on both sides of the ancestry, and O. crispum having been used three times.

One particularly brilliant form has been called O. Peerless var. James McNab, and has a great red-brown zone of colour on the lower two-thirds of the segments, that on the lip being smaller, and the ground colour white. As showing the method of workiug for colour, there was a batch of seedlings derived from Odontoglossum eximillus × Odontioda Coronation, one of which was just opening its first flower. It showed large, ruby-red blotches on a whitish ground, the margin being freckled with rose. This brilliant acquisition was called Odontioda Juno, and received a Preliminary Commendation from the R.H.S. a few days later.

There are four large Odontoglossum houses extending from the Corridor, and these contain a series of vigorous plants in all stages, the smaller being largely accommodated on broad shelves over the central path. In two of them there was a good display of bloom, and the third contained many plants of flowering size, many of them throwing up spikes. The houses are built with every modern convenience, open stages, pipes shielded with tiles or brick-work, top and side ventilation, the former lantern-fashion, so that it can be restricted as much as necessary, lath blinds extending laterally on rollers, and also canvas shading where necessary, the cultural arrangements being excellent in every respect.

In these houses many interesting things were in bloom, the Miltonias forming a particularly brilliant display. The bulk of the flowering plants, however, were in the large north house, which we shall come to presently. The Miltonias included many seedling M. vexillaria, M. v. gigantea, of particularly brilliant colour and with two spikes of seven flowers each, the brilliant M. v. memoria G. D. Owen, with a six-flowered spike, several plants of the handsome M. Frank Reader, with a great ruby-red blotch on the lip, M. J. Gurney Fowler, with a large, almost blackish-purple blotch, M. Princess Mary, a particularly beautiful blush form with a rose-purple radiating blotch and a rosy stain at the base of the petals, the rare M. Phalaenopsis, and a nice lot of M. Bleuana.

In the next houses we noted many seedling O. crispum, raised from choice blotched parents, and showing much variation in the amount and colour of the blotching. Other batches showed similar variation, for the parentage can be traced by means of numbers, each seedling bearing a label on which is recorded the number of the cross. Without this number it would in many cases be impossible to trace the parentage, and it throws much light on the difficulty of tracing the parentage of natural hybrids by comparing their characters. Other good things pointed out were some handsomely blotched forms of O. Victory, O. Nora, and forms of the white O. promerens xanthotes. In the latter the variation is limited to size and shape and the amount of the yellow blotching.

Among the Odontiodas we noted examples of the very distinct O.

Nirvana (Oda. Charlesworthii × Odm. nævium), with spikes of eight and nine flowers, the segments acuminate, and blotched with red-brown on a yellow ground, good forms of O. Gloss (Odm. triumphans × Oda. Charlesworthii), differing much in the depth of the shining, orange-buff or yellow ground, as well as in the shape of the segments, forms of O. Henryi, and seedlings of earlier crosses which successively reach the flowering stage, and form materials for selection. All were sturdy little plants, and there were many elsewhere of smaller size.

Passing into the large north house, we were confronted by a brilliant sight, between three and four hundred plants being in bloom, the majority being Odontiodas and Odontoglossums. Here the Odontiodas were numerous, including O. Aspasia with a long raceme of 16 blooms, O. Floryi with a large panicle of uniformly red flowers relieved by the orange-yellow crest, a magnificent example of O. Coronation with a panicle of large, round flowers, blotched with scarlet on a light yellow ground, a dark O. Cereus (Oda. Charlesworthii × Odm. excellens), and examples of O. Bradshawiæ, Vuylstekeæ, Henryi, Joan, Madeline, Cooksoniæ, Clotho, and others, these brightening up the house in a remarkable way. On the front stage was a large batch of seedlings and established plants of the same.

The Odontoglossums were numerous and excellent, and included various seedling forms of O. crispum, with broad, rounded segments and great diversity in the amount and colour of the spotting, a brilliant example of O. Wilckeanum, with clear yellow ground and large dark brown blotches, a charming form of O. Wyonianum, with clear white ground and rather few spots on the petals, a richly-coloured O. Marathon (amabile × eximium) just expanding, beautiful examples of O. Peerless, O. Nora, forms of O. Thompsonianum, and numerous well-grown examples of familiar hybrids.

In this house we also noted a brilliant form of Sophronitis grandiflora, Maxillaria Sanderiana, a few Cymbidiums, Masdevallia Rœzlii, and a few other cool-growing Orchids, which we must pass over.

The Cattleyas and allies occupy several houses, and are in thriving condition. Progress in this group now largely consists in recrossing the finer hybrids with each other and with the original parents, and in increasing the number of albinos. Among the latter some beautiful accessions have flowered, and we noted how easily the seedlings can be recognized by the bright green colour. Many beautiful things were in bloom, among those noted in the first house visited being the white Lælia purpurata Lewisii, Cattleya Dusseldorfii Undine, C. Mendelii alba, C. William Murray with six richly-coloured flowers, a very dark Brassocattleya Veitchii, the fine Bc. The Czar, with a zone of purple round the lip, light and dark forms of

Brassolælia Veitchii, and other good things, while out of bloom Mr. Armstrong pointed out plants of the fine varieties of C. Trianæ known as The Baron and The Premier, also a good plant of C. Iris, this being an example of a cross between the long and the short-bulbed Cattleyas, a group less easily grown than those of the labiata group.

Elsewhere we noted three good plants of Cattleya Skinneri alba in bloom, with the richly-coloured Temple's variety, examples of the fine Lælio-cattleya Macqueda and George Woodhams, with many other good things which must be passed over, as also the seedlings and smaller plants, all of them in thriving condition and promising a fine display ot bloom in the antumn.

A word must be added about the houses at Pembury, which Mr. Armstrong took over after the sale of the late Mr. J. Gurney Fowler's collection. They were easily reached by means of Mr. Armstrong's side-car. Here what may be called the stock plants are kept, and we found many interesting things in bloom, as might be expected from an establishment where some thirty thousand plants are grown. There were many Cattleyas both species and hybrids, some good Læliocattleyas, a few Dendrobiums, among which the orange-coloured D. chessingtonense was conspicuous, while among the Cymbidiums we noted the yellow C. Lowianum concolor. There were also some good Odontoglossums and Odontiodas, examples of O. Bradshawiæ and a light-coloured form of O. Sunbeam being noted among the latter. We also saw a few Masdevallias. The houses were originally designed for a general collection of Orchids, each group being represented, and they are necessarily used in the same way at present, though with much difference in detail, and we missed the fine collection of Dendrobiums in the long corridor which formed such a feature at our last visit. They are now widely dispersed.

The establishment is in excellent condition generally, and Mr. Armstrong has largely got over the labour difficulty by training a number of girls to do the work, and has found them very efficient. His own labours, however, and that of his assistant, Mr. Seymour, have been much increased, and it is only by strenuous effort that such a high level of culture has been maintained. The reward will doubtless come when normal times return, in, let us hope, the not far distant future.

PROBLEMS OF GENETICS AND EVOLUTION.—"The problem as to the origin of racial differences is a problem of evolution; the problem of the origin of individual differences is a problem of genetics." Babcock and Clausen, *Genetics in relation to Agriculture*, p. 2. And, we would add, the boundary line between them is the problem of the heredity of acquired characters, which awaits solution.

ORCHIS FOLIOSO-MACULATA.

A STRONG plant of this handsome hybrid between O. foliosa and O. maculata is blooming in the rockwork at Kew, with numerous others of O. Braunii, the corresponding hybrid between O. latifolia and O. maculata. It was obtained from the collection of W. R. St. Quentin, Esq., of Scarborough, but whether it is one of those which appeared originally in the collection of C. Wolley Dod, Esq., we are unable to say. The history of the latter was given by Mr. Wolley Dod (*Gard. Chron.*, 1899, i. p. 179) as follows :—

"Orchis foliosa makes hybrids with O. maculata. I have for many years grown O. foliosa as a hardy plant. Some years ago I noticed spotted leaves amongst them, but now that I have picked out many of these hybrids I find that plain leaves are as common in them as spotted. The flower spike is longer, the flowers smaller, and the general characters and habit partakes of both parents. They make excellent border plants."

We believe that the hybrid was subsequently distributed, though it may also have appeared independently in other collections where the two species are grown together. At all events, on July 3, 1900, Messrs. Paul & Son, Cheshunt, exhibited spikes of it at a meeting of the R.H.S., together with spikes of the supposed parents. It was recorded as fairly intermediate in character, the flowers being purple, and most like the Madeiran O. foliosa, with the leaves handsomely spotted (*O.R.*, viii. p. 251).

The circumstances under which the plant appeared in this collection are interesting, and were thus recorded by Mr. Wolley Dod under the heading "Spontaneous Hybrids of Hardy Plants." He remarked: "In the flower garden at Edge Hall weeding is performed with great discrimination, and a large proportion of self-sown seedlings is allowed to grow to maturity. As a consequence of this many spontaneous hybrids have sprung up in the course of years." These are then discussed in detail, and after the remarks on the hybrid above-named we find the following note on Orchis maculata :—

"O. maculata comes up spontaneously in such spots of the garden as it fancies, the seeds being plentifully present in the soil. A favourite spot for it to come is the centre of the mass of rhizomes of a German Iris. I may mention as a sign of the prevalence of Orchis maculata in the native soil, that near the garden is a field, which had been for many years ploughed land, but became full of this flower two years after it was laid down for pasture. In that case the roots may have been dormant in the soil, but I am sure that those in my garden came from seed."

Another closely-allied hybrid has since been described. Under the

name of Orchis Hepburnii, Mr. G. Clarence Druce describes a hybrid whose history is thus given (*Rep. Bot. Exch. Club*, 1915, p. 211): "This fine plant appeared spontaneously in the beautiful grounds of Sir Archibald Buchan Hepburn, where it grew with the Madeiran O. foliosa and the showy hybrid O. latifolia × maculata. He kindly forwarded me fresh specimens in July and August, 1915."

The parents in these cases grow far apart in a wild state, and the above facts illustrate a remark that we have previously made, that Hybridisation is largely a question of opportunity. R.A.R

NOTES FROM KEW.—VI.

THE hardy Orchids on the rockwork have fulfilled their early promise. A clump of the North American Cypripedium Reginæ, usually known under its later name of C. spectabile, has established itself on a fairly dry slope, and seems quite at home, having bloomed for several years in succession. Not far away is a plant of C. Calceolus. On a southern slope half-a-dozen plants of the very distinct Serapias lingua are in bloom, as on several previous occasions, so that the conditions are evidently suitable. Among British species may be seen the Tway-blade, Listera ovata, with wholly green flowers, and a clump of the swamp Epipactis, E. palustris, which succeeds well in a moderately dry spot. The North American E. gigantea also increases and multiplies in a similar situation.

The genus Orchis is now making a fine show. At the end of the rockwork is a large group of the Madeiran O. foliosa, bearing over fifty of its brilliant purple spikes, its broad, recurved shining green leaves being also very effective. O. maculata is in bloom in a variety of situations, often self-sown, for the seedlings spring up here and there among various low-growing plants, and are always attractive when in bloom. O. latifolia is represented by the typical form with bright purple flowers and unspotted leaves, and the far larger Glasnevin variety, the latter an imposing plant, being over 2½ feet high and bearing four long spikes of brilliant rose-purple flowers. The natural hybrid O. Braunii (latifolio-maculata) is also making a fine show, being represented by two large clumps and several smaller plants, the leaves being handsomely blotched with blackish purple. One clump with a dozen spikes is of a bright rose-purple shade, while a second is larger and of lighter colour. This is the plant which was long known as the Kilmarnock Orchis, O. maculata superba, but the intermediate characters are much too obvious to be overlooked. It is also interesting to compare it with O. folioso-maculata, of which a good plant is established close by. The latter hybrid appeared spontaneously in the garden of the

late Mr. C. Wolley Dod, where the two parents were grown together. Its history is given at page 125. Three plants of the bright purple O. laxiflora must also be mentioned.

Inside, there is a good display of bloom, both in the cool and warm divisions, the former including a number of Odontoglossums and Odontiodas, the latter Cattleyas and Lælia purpurata, with a number of hybrids, and a fine bank of the brilliant Renanthera Imschootiana, which remains long in good condition. The Sobralias have begun to bloom, and include S. macrantha and its white variety alba, also one called S. macrantha lilacina, presumably a wild plant, but indistinguishable from S. Veitchii, an artificial hybrid between S. macrantha and S. xantholeuca, and thus strengthening the belief that S. Veitchii also occurs as a wild plant. There are also examples of S. violacea and the bright yellow S. Lady Colman, while S. xantholeuca will soon be out. Thunias are also beginning to bloom, and include T. Marshalliana and T. Bensoniæ, with the artificial hybrid between them, T. Veitchiana, and a plant called T. Majoriana, of which we are unable to trace the history, though it is indistinguishable from T. Veitchiana, and is believed to have originated as an imported plant. It would be interesting to have this point cleared up, for there is presumptive evidence that the parents grow together, as also in the case of the Sobralia. It will be remembered that Dendrobium Ainsworthii was long known as a home-raised hybrid before its discovery in Sikkim, in a locality where the two parent species grow on the same trees.

Among examples of good culture may be mentioned a fine clump of the Japanese Angræcum falcatum, which is grown in a basket, and is crowded with its graceful white flowers, which assume a cream colour as they fade. Also two large specimens of Lycaste Deppei, the larger with about forty flowers, these also being very effective. The distinct L. gigantea is also in bloom, with two plants of the bright yellow Anguloa Clowesii, while A. Ruckeri and A. virginalis are in bud. The quaint genera, Stanhopea and Catasetum, which are well represented in the collection, are also beginning to flower.

Miltonia festiva is a particularly interesting natural hybrid that is carrying three spikes. The parents are M. flavescens and M. spectabilis, and the former was in bloom when the first flowers expanded; the other parent usually blooms somewhat later. Other interesting things in bloom are Dendrobium regium, aggregatum, and the violet-blue D. Victoria-Regina, Oncidium lamelligerum and incurvum, the former a species of the macranthum group, Maxllaria tennifolia and Sanderiana, Calanthe Dominii, Microstylis Scottii, the bronzy leaves zoned with silvery white. and others too numerous to mention, for the collection is rich in botanical rarities, and there is a constant succession of bloom.

ORCHIDS OF COSTA RICA.

THE following extract from a letter of Mr. C. H. Lankester, Las Concavas, Cartago, Costa Rica, who has previously sent some notes on Costa Rican Orchids (see page 3), will be read with interest.

I have had many small Orchids which would have interested you, but insecurity of transit has prevented me from sending them. In my move from Cachi to this place many small things were lost, and some of them one may never see again. Here, in a hedge quite close to my farm, my children found a lot of a tiny Cryptophoranthus, which grows downwards and has leaves heavily spotted with purple dots. I saw it once in Cachi, and had a few little pieces of it. Hexadesmia crurigera is very abundant in the hedgerows in Agua Caliente (our nearest village), principally on Erythrina, and occasionaly on Acnistus arborescens, which, by the bye, is an excellent artificial host for nearly all Orchids, having a deeply pitted and grooved pithy bark. I gathered a great many plants in flower, and they looked charming placed in Indian pottery, besides rendering our rooms deliciously fragrant; now they have been attached to various trees in the garden.

Native Orchids now in bloom are Odontoglossum Schlieperianum, an Oncidium, Comparettia falcata, Lacæna spectabilis, and Epidendrum alatum, the latter deliciously scented at mid-day. An Epidendrum (aromaticum?) that we have in abundance attracts Syntomids that one never sees otherwise, unless at bright light at night time. The Stanhopeas are all budding, and we shall soon have masses of "Toritos," as the Costaricans call them (little bulls, in allusion to the horns of the hypochil), a name that by analogy is freely conferred here on other Orchids without justification. The Cattleyas are segregated by the name of "Guaria," but Orchids as a group bear the hideous name of "parasites." It is always a delight to find the *Orchid Review* in my Letter Box; I never wait to get home before opening and just dipping into it. In reference to materials for growing Orchids. I am trying the fibrous turves formed by willow roots. It might be worth investigating their possibilities. If you have friends in the low countries, get them to send you samples taken at different distances from the trunk. I send you two small Orchids for identification, both from Cachi, a Stelis with maroon flowers, and a Masdevallia, the latter having brownish-red, connivent sepals, tipped with yellow.—C. H. LANKESTER.

[The Masdevallia is M. demissa, Rchb. f., the other probably Stelis leucopogon, Rchb. f., both described from Costa Rican materials. The final note recalls an article entitled, "Willow roots as substitute for peat" (*O.R.*, iii. p. 21), and we should be glad to hear of any further results.—ED.]

ANGRÆCUM GRACILIPES.

THE interesting Madagascar Orchid here figured was introduced by Messrs. Charlesworth & Co., Haywards Heath, and received an Award of Merit from the R.H.S. in November, 1912, under the name of Angræcum recurvum, and was afterwards figured (*O.R.*, xxi. p. 369, fig. 65).

Fig. 14. ANGRÆCUM GRACILIPES.

The flowers individually bear much resemblance to A. recurvum, and the original comparison was made from a single flower, but when full materials were available it was seen to be a very distinct species, and it was described and figured as A. gracilipes, Rolfe (*Bot. Mag.*, t. 8758). Its distinctive characters lie in the much elongated flower pedicels, and in the far larger,

much elongated leaves, the latter character not well shown in the photograph from which the block was prepared. The figure represents the plant certificated, which formed an exceedingly graceful object. It has since flowered at Kew, this being the source from which the *Botanical Magazine* plate was prepared. It is one of several species which form a very natural group.—R.A.R.

ORCHIS LATIFOLIA GLASNEVIN VAR.—A clump of this exceptionally brilliant variety is now making a fine show at Kew, and will continue for the greater part of June. It is about twice the size of the common marsh Orchis, and the colour is deep rose-purple, of so deep a shade as to nearly obliterate the usual purple spotting. The variety has long been known, and is the one which received an Award of Merit from the R. H. S. in June, 1895, when a plant of the type also received a Botanical Certificate (*O. R.*, iii. p. 252). We also saw it at Glasnevin in July, 1903, and noted it as a noble green form, about three feet high, with wholly green leaves and enormous spikes of flowers (*O.R.*, xi. p. 240). At that time we were uncertain as to its history, but we have now found what evidently refers to the same thing. A note from the *Irish Farmers' Gazette* is cited in the *Garden* (1876, ii. p. 75), as follows:—"This, one of the most beautiful of our native Orchids, shows a marked liability to diverge into very charming varieties. One of the most noteworthy of these, or we should, perhaps, say the most so of any of them, is the very distinct and striking variety found by Dr. Moore some dozen years since in a meadow at the base of the Dublin mountains. This is a robust form, growing to a height of from 18in. to 2ft, The raceme of flowers nearly equals that of the Madeiran Orchis foliosa. and has the advantage of it in respect of colour, that of the Irish plant being of an intense rosy purple. This variety flowers a fortnight earlier than the typical form. For this reason Dr. Moore, by way of distinguishing it, aptly gave it the name of O. latifolia præcox. Another remarkable trait in the character of our plant is its free tendency to seed, the readiness with which the seed germinates, and the precocity of the seedlings growing into flowering plants. Only three roots were transferred from the original habitat to Glasnevin, and one of them found suitable quarters in the artificial bog there. Here it soon formed a stout tuft, producing several flower stems, forming during a great portion of the month of June each year quite the feature of the interesting spot in which it grows. Now, not alone in the immediate quarters of the original plant are flowering specimens to be seen, but many of them elsewhere in the garden, as for instance, among the pots of alpine plants, where the seed has germinated spontaneously. What makes this more singular is, that a similar tendency to produce seed is not at all a characteristic of the normal form of the plant.

MASDEVALLIA MUSCOSA.

THIS interesting Masdevallia has recently flowered freely at Kew, and has afforded an opportunity of observing the sensitive character of the lip, which was originally discovered over thirty years ago. When the flower first opens, the tails of the sepals turn back and the lip is seen folded up just beneath the arch of the petals. Presently the triangular blade falls down between the lateral sepals, disclosing a yellow ridge on the disc, which is the seat of irritability. On touching this gently with a hair, the lip is at once raised, at first slowly and then closes suddenly, with a snap. In about twenty minutes it descends again, and on being again touched it closes just as quickly as before. Mr. Bean, who originally made the discovery, placed awinged aphis on the lip, which was carried up and held firmly, and the same happened when a house-fly was tried. This is evidently the mechanism by which the flowers are fertilized in a wild state. An insect alighting on the lip would certainly touch the ridge, and would be lifted up and imprisoned in the 'box' formed when the lip is closed. The excessive hairiness of the scapes and ovaries no doubt serves to prevent crawling insects from reaching the flowers. A figure of the plant may be seen at t. 7664 of the *Botanical Magazine*, and it may be added that the lip of M. xipheres, Rchb. f., also at Kew, behaves in precisely the same way.

R.A.R.

ORCHIS PURPUREA ALBIDA.—Orchis purpurea, often known under its later name of O. fusca, is a handsome species of Orchis that is found locally in Kent, sometimes, we believe, in abundance, and Mr. F. J. Hanbury, in his *Flora of Kent* (p. 330) mentions that it occurs rarely with white flowers. A very light-coloured form has been sent to Kew, with the following note. "It was found growing in one place only, side by side with O. fusca. I have observed these two for several years, and no intermediate forms occur. Friends who have observed these flowers for a long time tell me that the pink one is known as large as four feet high, in any case it is a much more robust plant than the type, which is also sent. Another peculiarity of this is that very frequently a large number of its flowers have untwisted ovaries, as in the specimen sent.—G. L. Davidson, R.E. Mess, Aldershot." It is near the variety known on the Continent as O. purpurea albida, in which the lip is said to be entirely white, though we believe the colour is retained in the sepals and petals. In this case the whole flowers are very pale, with obscure markings, and the vigorous habit and untwisted ovary are as described.—R.A.R.

CALENDAR OF OPERATIONS FOR JUNE.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

THE recent warm and bright weather has been favourable to the culture of all Orchids, and good progress has been made, especially by those grown in the warmer divisions. The details of management as regards temperatures, watering, ventilation, and atmospheric moisture laid down for the growing season may be continued for some time onward. During spells of bright weather, such as we have recently enjoyed, the temperatures cannot reasonably be kept too humid, but should a spell of wet and cloudy weather prevail, much less damping down is necessary. One should aim at a moist, buoyant atmosphere in every department, and whenever the houses become dry they should at once be damped down. At this season there will be an abundance of flowers, and even the most modest collections will be interesting.

CATTLEYAS AND ALLIES.—C. Warscewiczii (gigas) will now be in active growth, and should occupy the lightest position in the house, and have liberal supplies of water. The earliest of them are already showing their flower sheaths, and in some cases the flower buds are pushing up the sheaths. The later ones will have the sheaths formed in the growths, that is if they are strong enough to flower this season. Withholding water after this date, as an inducement to the plant to flower, is a practice not to be recommended. C. Mossiæ and Mendelii are now in full flower, also many Læliocattleyas, Brassocattleyas, and other hybrids which at this season make a gorgeous display. All that are in need of new rooting material may have attention as soon as they pass out of bloom.

The general plan of repotting these plants soon after their flowering period is passed will be found quite satisfactory, provided the compost is kept on the dry side until the new roots get active in the new material. In a group of plants as large as this one there is great diversity of form and character, both in the pseudobulbs and roots, and the latter character affords a guide as to treatment. Those having thick fleshy roots may be placed in larger receptacles than those with thin fibrous roots. The latter should be placed in small receptacles, as they have not sufficient energy to push through a thick mass of material. In no class is it more desirable to study the individuality of every plant than in this. At present it is most difficult to bestow sufficient attention on the plants to obtain the best results, but to those who have the time this is a most interesting study, and worthy of everyone's consideration.

CALANTHES.—By this time the deciduous Calanthes will be well rooted,

and may have more liberal supplies of water, with an occasional watering of weak manure or soot water. Care must be taken that the liquid manure is not too strong, or the water too cold, as I am convinced that many cases of spot and disease are attributable to these two things.

MILTONIAS.—There is at the present day so much variety of colour in the different species and hybrids of the M. vexillaria group, that a large batch of them make a glorious display. When well grown few plants produce flowers in such abundance, and they can be enjoyed throughout the summer months. Plants which produced their flowers early, will now have passed out of bloom, and should be afforded a short rest, by placing them in cooler quarters. No attempt must be made to withhold water at the roots, and nothing should now be done to induce premature growth, for the longer the period of rest the stronger the growth will be when the season of activity commences. Although these plants are never entirely inactive, they are some little time recuperating after carrying a heavy crop of flowers. The hybrids, of which M. Bleuana and M. Hyeana are the two best known, make their growth in the same way as M. vexillaria, and require similar treatment, with the exception of temperature, for they like a slightly higher temperature than M. vexillaria at all seasons, a character derived from M. Roezlii. There are several other very beautiful hybrids which deserve a place in the most select collections.

EPIDENDRUM PRISMATOCARPUM is a pretty species which many growers in the north find some difficulty in growing and flowering satisfactorily. This may perhaps be attributable to climatal conditions, but in any case it is seldom seen in such good condition in the north as in the southern counties. As the plants pass out of bloom, any that require additional rooting space should have attention. It thrives in a Cattleya or Intermediate house temperature, and enjoys a moderate amount of light and air. A clean fibrous compost answers its requirements.

ZYGOPETALUM MACKAYI AND Z. CRINITUM, will now be rooting freely, and must receive supplies of water whenever the compost becomes dry. The warm end of the Intermediate house will suit them at this season, and their surroundings should be kept moist. It is also advisable to spray them overhead occasionally to prevent attacks of insect pests, Zygocolax Veitchii, Colax jugosus, and other similar plants thrive under the same co nditions, and all should be shaded from strong sunlight.

MASDEVALLIAS.—Many of the smaller Masdevallias will be making a nice display of their interesting flowers, and must be protected from all strong sunshine. Many of the stronger-growing M. Harryana section are also throwing up their flowers, and a cool humid temperature should be maintained at all times. A careful watch must be kept for thrip on these plants, as it not only disfigures the foliage but also destroys the flowers.

The winter-flowering M. tovareusis may still be supplied with new compost if the old soil is at all decomposed. Masdevallias soon decline if allowed to remain in a decomposed material, in fact neglect as regards repotting of any Orchid is the first steps to deterioration.

ODONTOGLOSSUM CITROSMUM AND O. UROSKINNERI. — Plants of these two species may have attention should they be in need of new rooting material. The pots or pans must not be too large, and tne drainage must be perfect, as whilst in full growth and the plants well-rooted they require abundant supply of water. The usual Odontoglossum compost is quite suitable, and the plants must be potted firmly. O. citrosmum delights in a light position in either the Cattleya or Mexican house, whilst O. Uroskinneri thrives best at the warm end of the cool-house. O. grande, Insleayi and others of this section may be repotted at this season should they be in need of it. They are best accomodated in the Cool house during the hottest part of the year, and removing them to the Intermediate house for the winter months. There are many plants which succeed much better under these conditions than they do if allowed to remain in the Cool house the whole year round.

CYPRIPEDIUMS of the bellatulum section, which include many plants of sterling merit, should have attention as regards new rooting material should the compost in which they are growing be at all decomposed. These plants are best grown in pots, which must be well drained. Well rooted specimens in good material must not be disturbed, as they resent this more than any other section of Cypripedium. Failures to grow them satisfactorily is usually attributable to the excessive use of the water pot. Whilst in full growth they delight in a copious supply, but whilst at rest much less will suffice. Their thick fleshy leaves and roots are quite different from those of the ordinary green-leaved Cypripediums, and therefore require a different treatment. They appreciate a drier material to grow in, and they are capable of withstanding more drought, which facts should be bourne in mind when dealing with their cultivation. These plants succeed either in a compost made up almost entirely of loam fibre, with some small pieces of mortar rubble added, or they may be grown in the ordinary Cypripedium compost. The plants must be potted rather firmly, and should be elevated up to the glass in a warm Intermediate house The secret of successful culture is to give water at the roots only when the compost is really dry, and never to apply water overhead. These remarks also apply to C. niveum, C. Godefroyæ, and all their hybrids, which are usually considered somewhat refractory subjects.

CŒLOGYNES.—Such plants as C. Dayana, C. asperata, and others that produce their flowers at this season, should be repotted if necessary when their growths are well advanced and about to push forth roots. These

plants require abundance of water whilst making their growth; during this later stage they must not be allowed to shrivel for the want of it; afterwards they require a decided resting period. The compost should be placed in the receptacles moderately firmly, and the plants must be shaded from strong sunshine during the growing period. Many of the species are of a rambling nature, and some pains must be taken to keep them in a compact form.

GENERAL REMARKS.—After a period of bright sunshine, such as we have recently enjoyed, thrip, and other insect pests are often troublesome, so that it is essential to keep a sharp look out, and exterminate them by the usual methods should they put in an appearance. It is difficult during these strenuous times to attend to everything, but this is a matter that will not wait, and the plants must be maintained in health until the return of normal times.

ROOT-FUNGI OF ORCHIDS.—With respect to the notes at pp. 55, 96, on the seedling Phalænopsis Sanderiana × rosea germinating in an aseptic tube, M. Fernand Denis, Balaruc-les-Bains, sends us an interesting extract from a posthumous work by the late M. Noel Bernard, entitled "L' Evolution des Plantes," completed by his wife. At page 286 occurs a note on the germination of Orchids, of which the following is a summarised translation. "Germination by the action of concentrated solutions is very slow but very regular; the young embryos have the ordinary appearance, and the seedlings are sufficiently developed to live in the houses after being transplanted. Under the conditions of my experience with the technique of Pasteur's culture, it is better and easier to germinate certain Orchids by the use of concentrated solutions than to have recourse to the fungus Rhizoctonia, of which it is often difficult to procure races sufficiently active. We may therefore conclude that although the fungi have their special function, it is possible to substitute for this symbiosis diverse conditions which are easily realisable, and which are followed by similar results." M. Denis concludes that he had good reason for believing that his friend, M. Noel Bernard, during the later years of his life, realised that his former views were too exclusive, and the extract also affords a possible clue to the reason why the seedling Phalænopsis Sanderiana × rosea was successfully germinated in an aseptic tube, the role of the fungi being secured by other means. It is all a question of nutrition. The highly-specialised seeds of Orchids seem to contain an insufficient store of nutriment to carry them over the initial stages of germination, and have contracted a habit of relying on the assistance of the root-fungi. The possibility of supplying the deficiency by the concentrated solutions mentioned affords interesting possibilities for the future.—R.A.R.

MILTONIA BLEUANA VAR. STEVENSII.

GREAT progress has been made during recent years in hybridising the Columbian Miltonias, and the result has been to extend considerably the range of colour and time of flowering in the genus. Increased variety has been specially obtained as the result of using the varieties of Miltonia vexillaria having a large crimson blotch at the base of the lip, a character found in the rare autumn-blooming variety Leopoldii, which we believe has not been much used for hybridising. It was the seed-parent, however, of M.

Fig. 15. MILTONIA BLEUANA VAR. STEVENSII.

Bleuana var. Stevensii, which was raised some years ago in the collection of the late W. Thompson, Esq., Stone, by crossing with M. Roezlii alba. The above figure represents the first flower produced by the seedling, and it will be noticed that the crimson blotch is practically reduced to a series of radiating lines, the general colour of the flower being blush white. We do not know if other seedlings reproduced the blotch, but the character is now known to be erratic, as batches from M. vexillaria memoria G. D. Owen give both blotched and unblotched seedlings. The variety was named after Mr. Walter Stevens, who was for so many years Mr. Thompson's gardener, and one of the pioneers of sucessful Odontoglossum raising.

The original M. Bleuana was originally raised by M. Alfred Bleu, of Paris, from M. vexillaria × Roezlii, and flowered for the first time in 1889, being dedicated to the raiser. Shortly afterwards it was also raised by Messrs. James Veitch & Sons, Chelsea. The original plants showed a good deal of variation, and included varieties to which the names of aurea, rosea and splendens were given.

SOCIETIES.

ROYAL HORTICULTURAL.

A MEETING was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on May 7th, and brought together a moderate display of Orchids, the awards consisting of three medals and one Cultural Commendation.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, R. Brooman White, Walter Cobb, W. H. White, W. T. Kaye, J. Charlesworth, Arthur Dye, T. Armstrong, E. R. Ashton, Pantia Ralli, F. J. Hanbury, Stuart H: Low, R. A. Rolfe, F. K. Sander, and C. J. Lucas.

CULTURAL COMMENDATION.

LÆLIOCATTLEYA J. F. BIRKBECK FOWLER'S VAR. (C. Mendelii × Lc. Henry-Greenwood).—To Mr. J. Collier, gr. to Sir Jeremiah Colman, Bart., Gatton Park, for a very finely-grown specimen, bearing two spikes, the best with four magnificent blooms of excellent shape and substance. The sepals and petals are blush white, and the front of the lip ruby purple, with some yellow in the throat, and reddish markings on the disc.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), showed Odontoglossum Gatton Princess (Queen of Gatton × eximium), bearing a spike of well shaped flowers, the sepals and petals light yellow heavily blotched with purble red, and the lip white in front, with a dark purple-red blotch in front of the yellow crest.

A. P. Cunliffe, Esq., Woodford, Salisbury (gr. Mr. Tindall), showed a very fine form of Cattleya Tityus (Enid × Octave-Doin), bearing bright rose-coloured flowers with the front of the lip ruby crimson.

Messrs Armstrong & Brown, Tunbridge Wells, staged a fine group, to which a Silver Flora Medal was awarded. It contained a fine series of Odontoglossums, Odontiodas, and Miltonias, noteworthy among the latter being the handsome M. Frank Reader, a bright rose pink hybrid with a large ruby crimson mask on the lip, good examples of Læliocattleya Fascinator, Hyeana, and others, Cypripedium callosum Sanderæ, C.

Holdenii, Cattleya Dusseldorfii Undine, Odontoglossum promerens, O. promerens xanthotes,and a number of blotched hybrids, Odontioda Madeline, and numerous others in well-grown examples, the whole forming a very fine exhibit.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a large and handsome group, in which Odontoglossums were a prominent feature, noteworthy among these being O. Doreen (eximium × Empress of India), a pretty white flower with light purple markings, O. crispum xanthotes, and some fine blotched hybrids, Miltonia vexillaria gigantea, Charlesworthii, Venus, and St. Andre, Cattleya Dusseldorfii Undine, and a fine C. Skinneri Temple's var., Læliocattleya Dominiana, Smilax, Charlesworthii, numerous brilliant Odontiodas, a fine example of Odontonia Magali-Sander xanthotes, and other good things.

Messrs. Stuart Low & Co., Jarvisbrook, also received a Silver Flora Medal for a fine group, including several well-bloomed plants of the brilliant Renanthera Imschootiaua, a good example of the rare Diacrium bicornutum, Læliocattleya Moonbeam (C. Schrœderæ × Lc. Ballii), having apricot yellow flowers with an orange throat to the lip, a fine Lc. Dominiana, Lc. luminosa aurea, the white Brassocattleya Veitchii Queen Alexandra, Bc. Maronii alba, a well bloomed Sophronitis grandiflora, the fringed Dendrobium Brymerianum, and Cattleya Schrœderæ, the group being very effective.

Messrs. C. F. Waters & Co., Balcombe, were awarded a Silver Banksian Medal for a good group of well-bloomed Dendrobium, with examples of Cymbidium insigne, Lycaste Skinneri, Odontoglossum crispum and Edwardii, Cypripedium hirsutissimum, Odontioda Bradshawiæ, Brassocattleya Veitchii, Sophronitis grandiflora, Cattleya Mossiæ, Læliocattleya Fascinator, and others.

A second meeting was held on May 28th, when Orchids produced a brilliant display, three of the groups staged being particularly fine, and the awards consisted of three medals, one Award of Merit, and one Preliminary Commendation.

Orchid Committee present: Sir Harry J. Veitch (in the chair), J. O'Brien (hon. sec.), W. Bolton, W. H. White, R. A. Rolfe, R. G. Thwaites, Pantia Ralli, Fred K. Sander, J. E. Shill, J. Charlesworth, W. H. Hatcher, W. J. Kaye, Walter Cobb, and R. Brooman White.

AWARDS OF MERIT.

ODONTOGLOSSUM CRISPUM BEAUTY OF ASHTEAD.—A charming thing, obtained by crossing the varieties of O. crispum, Rossendale and Empress of India, and bearing seven finely-shaped flowers, about two-thirds of the segments being covered with dark purple-red blotches, leaving a broad

white margin, and the lip with similar blotches in front of the yellow crest. Exhibited by Pantia Ralli, Esq.

PRELIMINARY COMMENDATION.

ODONTIODA JUNO (Odm. eximillus × Oda. Coronation).—A brilliant novelty, approaching the Odontoglossum parent in shape, but the greater part of the segments covered with concentric ruby-red blotches, the margin bearing a band of smaller spots, while the lip is white in front, with ruby-red blotches in front of the yellow crest. Exhibited by Messrs. Armstrong & Brown.

GENERAL FXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), submitted flowers of three fine Odontoglossums for the opinion at the Committee as to their proper names. One was a bright lilac flower, with ruby-red markings, and thls was referred to O. Lambeauianum. The others, which had been obtained on the Continent as O. crispum, and which were white with large blotches, were referred to O. eximium.

Walter Cobb, Esq., Normanhurst, Rusper (gr. Mr. C. J. Salter), sent cut spikes of the handsome purple Sarcopodium Lyonii, Odontioda Bradshawiæ Cobb's var., and a well-blotched Odontoglossum.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent a fine plant of Bulbophyllum Balfourianum, a remarkable New Guinea species with glaucous leaves and an inflorescence of four large, fleshy flowers, mottled with claret-red on a paler ground.

Pantia Ralli, Esq., Ashtead Park, Surrey (gr. Mr. W. H. White), showed Odontoglossum crispum Masterpiece, a fine unblotched seedling, bearing a spike of thirteen blush white flowers, of excellent shape and substance.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a large and brilliant group, which gained a Silver gilt Flora Medal. It was largely made up of finely-grown hybrids Odontoglossums and Odontiodas, with some good Miltonia Bleuana, vexillaria and Hyeana, a beautiful example of M. Princess Mary, M. Frank Reader, Lælia purpurata and a white variety, Dendrobium chessingtonense, Cypripedium Rothschildianum, C. Dallas (Curtisii × Fairrieanum), C. callosum Sanderæ, Cattleya Schrœderæ, a well-grown Maxillaria tenuifolia, a few Læliocattleyas and others.

Messrs. Charlesworth & Co, Haywards Heath, also received a Silver-gilt Flora Medal for a brilliant group, in which Miltonias were particularly well represented, and included excellent examples of M. Charlesworthii, M. Isabel-Sander, and M. vexillaria vars. gigantea, Cobbiana, aud Lyoth. We noted also good examples of Cattleya Mossiæ Wageneri, the brilliant C. Skinneri Temple's var., with two large spikes, Læliocattleya Ulysses alba and several good Lc. Fascinator, Brassocatlælia Joan, Odontioda Hiawatha

(Charlesworthii × Coronation), light salmon yellow without the usual blotching, a brilliant rosy form of O. Royal-Gem, a copper-red form of O. Brewii, with examples of O. Chantecler, Cooksoniæ, and Patricia, Odontoglossum Penelope (Rolfeæ × Olympia), O. eximium, a fine O. crispum xanthotes, and others.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for a fine group, in which we noted several plants of the brilliant Disa Luna, Cochlioda Nœtzliana with five racemes, the rare Vanda Bensonii, Cattleya Mossiæ and var. Reineckeana, C. Dusseldorfii Undine, Læliocattleya Domos, Hyeana and Mrs. Temple, Sophrocatlælia Marathon, Brassocatlælia Triune, Cypripedium Wottonii, St. Albans, and Rothschildianum, and a number of good Odontoglossums and Odontiodas.

Messrs J. & A. McBean, Cooksbridge, staged a noble plant of Dendrobium Sanderæ, with stems abont four but high, and bearing several finely-developed inflorescences.

A letter was read from the Council suggesting an undue increase in the number of too-much-alike varieties, and expressing the hope that the Committees would endeavour to restrict the awards in such cases. It was, however, remarked that such awards were only made after comparison with drawings of previously-certificated varieties, and that the march of improvement was so rapid that it was difficult to restrict the awards further without defeating the object in view.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on May 9th, when the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, A. R. Handley, J. Howes, A. Keeling, J. Lupton, D. McLeod, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Briton, a full, round, white flower, of good form and texture, with a deep blotch on the lip; from Mrs. S. Gratrix.

Odontoglossum crispum xanthotes Conyngham, a well-shaped flower, with lemon yellow markings; from Dr. Craven Moore.

Odontoglossum Pescatorei Monica (Lindenii × Charlesworthii), a pleasing flower, fairly densely spotted; from Col. Sir J. Rutherford, Bart.

AWARD OF MERIT.

Odontioda Harlequin, a fairly large flower, with large reddish brown blotches on the segments; from S. Gratrix, Esq.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum crispum Milton (Franz Masereel × F. K. Sander), a deeply blotched flower; from R. Ashworth, Esq.

CULTURAL CERTIFICATE.

To Mr. S. Davenport, for plants of Miltonia Charlesworthii and M. vexillaria memoria G. D. Owen.

R. Ashworth, Esq., Newchurch (gr. Mr. Davenport), staged a fine group, to which a Silver-gilt Medal was awarded. It contained Cattleyas in variety, including forms of Mendelii and Schrœderæ, Lawrenceana Hyeana, Dusseldorfii Undine and Robert de Wavrin, Brassocattleya Bianca var. Daphne, Odontioda Teresa and Bradshawiæ Aglaia, Miltonia Bleuana vars. Rossendale and purpurea, and others.

W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), was awarded a Large Silver Medal for a fine group, including Cattleya Mendelii vars. Hercules, Quorn House, and St. Amaranthe, Brassocattleya Veitchii, Brassocatlælia King-Emperor, Miltonia vexillaria Lyoth, virginalis, M. Bleuana rosea, M. Charlesworthii, Odontoglossums in variety, including crispum xanthotes, Plato, Walkeræ, and others.

The Exors. of the late O. O. Wrigley, Esq., Bury (gr. Mr. E. Rogers), were awarded a Special Vote of Thanks for a group of Miltonia vexillaria, including vars. Cobbiana, Crimson King, leucoglossa, memoria G. D. Owen, Lyoth, robusta, nobilior, and Empress Augusta Victoria.

Messrs. Cypher & Sons, Cheltenham, were awarded a Silver Medal for a good group, including Cattleya Mendelii, Mossiæ, and Warneri, Lælio-cattleya Aphrodite, Baden Powell, and Fascinator, Odontoglossum crispum, Pescatorei, and harvengtense, Cirrhopetalum Collettii, and others.

Interesting exhibits were staged by S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); Mrs. Gratrix, Whalley Range (gr. Mr. J. Howes); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); and Col. Sir J. Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton); the majority of them appearing in the above List of Awards.

The annual meeting of the Society was held at 2.30 p.m. on the same date, the Rev. J. Crombleholme presiding. The Report and Balance Sheet were adopted. R. Ashworth, Esq., was re-elected President. The Vice-Presidents, Officials, and Committee were re-elected, with the addition of Wm. Pickup, Esq., to the Amateurs, and Messrs. E. Rogers and S. Davenport to the Gardeners.

The Prizes were presented to the successful exhibitors as follows:—

J. J. Bolton's Gold Medal to the Rev. J. Crombleholme. Gardener's Prize to Mr. E. Marshall.

J. J. Bolton's Silver-gilt Medal to S. Gratrix, Esq. Gardener's Prize to Mr. J. Howes.

Botanic Society of Manchester's Gold Medal to Mr. C. Branch.

A. R. Handley's Prizes to Messrs. E. Rogers and S. Davenport.

Charlesworth's Objet d'Art to S. Gratrix, Esq. Gardener's Prize to Mr. J. Howes.

Cypher's Gold Medal to R. Ashworth, Esq. Gardener's Prize to Mr. S. Davenport.

Dr. Craven Moore's Silver Cup to R. Ashworth, Esq. Gardener's Prize to Mr. Davenport.

A. R. Hanmer's Silver Cup to R. Ashworth, Esq. Gardener's Prize to Mr. Davenport.

McBean's Silver Trophy to R. Ashworth, Esq. Gardener's Prize to Mr. Davenport.

P. Smith's Prizes to Messrs. S. Davenport, C. Branch, and J. Lupton.

The Secretary is pleased to report that the meetings during the coming session will be held as usual, also the competitions, several of the prizes having been promised. The complete list will appear in the members' cards, as before, in due course. It is thought advisable that the reports shall be sent out monthly instead of fortnightly as previously.

WILLOW ROOTS AS SUBSTITUTE FOR PEAT.—A note at p. 128, on the use of willow roots as a potting material for Orchids recalls a record of a quarter of a century earlier (*O.R.*, iii. p. 21), and we should be glad to know whether others have tried the materials, and, if so, with what sucess. Mr. A. Annandale then wrote, "I send you by post a sample of willow roots, which I have used for the past two years, in conjunction with sphagnum moss, for potting Orchids, with the greatest success; finding it superior to peat, fern root, or any other substance of like nature. I am not aware that it has been used previously, and it was only by chance that I discovered it. I have a number of willow trees whose roots find their way through the banks into a small stream, and for a number of years these roots have been regularly cut to prevent it choking the flow of water. As my gardener was not satisfied with the peat he was able to obtain in the district, owing to its deficiency in fibre, I suggested he should try the willow roots, and now, after two years' trial, he is satisfied that no better substance could be obtained, as the Orchids have thriven in a way they never did previously. The advantages appear to be that perfect drainage is secured; that the fibre does not become sour or rot; and that the roots of the Orchids take to it most kindly, penetrate it, and grow freely, and show no symptoms of decay, although potted for a long time. It also seems to retain a sufficiency of moisture in conjunction with the sphagnum longer than other substances."

Nothing further appears to have been heard about the matter, which is rather curious, and now that pottiug materials are so scarce it would be interesting if further experiments could be made.

ORCHID NOTES AND NEWS.

OWING to a three week interval, only a single meeting of the Royal Horticultural Society is fixed for June, on the 18th, the following dates being July 2nd and 16th. The meetings are now held in the London Scottish Drill Hall, Buckingham Gate, Westminster, and the Orchid Committee meets at 11.45. a.m.

The dates of the June meetings of the Manchester and North of England Orchid Society are the third and 20th, the following meeting being fixed for July 18th. The Society will then adjourn for the summer vacation, and will resume uo September 5th. The meetings are held at the Coal Exchange, Manchester. The Committee meets at noon and the exhibits are open to the inspection of members and the public from 1 to 4 p.m.

We regret to learn that the Orchid Collection of W. P. Burkinshaw, Esq., Hessle, E. Yorks, is to be dispersed, owing to Mr. Burkinshaw's age and ill health, the sale by Messrs. Protheroe & Morris, taking place about the end of June. Mr. J. T. Barker, who has been in charge of the collection for the last twenty-three years, and who is well known to our readers as the writer of our monthly Calendar of Operations, will then be seeking a situation in a similar capacity. and we hope that his well-known abilities will meet with a suitable reward.

A Roll of Honour of past and present Kewites is given in the last issue of the *Journal of the Kew Guild*, and we deeply regret to see the names of Sergt. J. Giles and Sergt. H. W. L. Southgate among the fallen. Both have held the post of sub-foreman of the Orchid department. An Obituary notice is accompanied by excellent portraits.

Mr. Giles was 24 pears of age when he came to Kew, in November, 1903. In April, 1905, he was promoted to the post of sub-foreman of the Orchid Department, where he remained for four years, afterwards becoming Assistant Superintendent of the Municipal Gardens, Shanghai. In 1912 he went to Vancouver, and was engaged in landscape work when the war broke out, and he joined the forces. He was killed by a shell in France in July 1917, and is buried behind the lines. He leaves a widow and one son,

Mr. Southgate came to Kew in March, 1910, from the famous Orchid establishment at Westonbirt, Gloucestershire, where he returned after two years' experience in the Orchid department at Kew. Three months later he returned to Kew as Orchid sub-foreman, leaving in December, 1913, to join the staff of the *Gardeners' Magazine*. In October, 1914, with a younger

brother, he joined the Norfolk Regiment, and in January, 1916, they sailed for Egypt, and took part in the Palestine Campaign. After the first terrible battle of Gaza on April 19th, 1917, Sergt. Southgate was posted as wounded and missing, no further information being obtainable until seven months later, when news came that his body had been found and interred by one of our burial parties.

We also notice that "Somewhere in France" Staff-Sergeant C. P. Raffill, A.S.C., foreman of the Tropical Department (which includes the Orchids), has distinguished himself, and has received the congratulations of the Commandant, G.H.Q., for Gallant Conduct.

Writing from Auckland, New Zealand, we note that Mr. George Mills, in the same issue, mentions Dendrobium speciosum as one of the plants that are perfectly hardy there.

ORCHIDS IN SEASON.

THREE interesting flowers are sent from the collection of F. S. Mumford, Esq., Wrexham. A form of Cattleya Mendelii is remarkable for having the petals variegated with broad stripes of rose and white. The cause is not quite apparent, and whether the character is permanent remains to be seen, but Mr. Mumford says that the leaves are blotched with chocolate, so that the two characters may be connected together. A second flower is a light-coloured form of C. Schrœderæ, a species characterised by its pleasant heliotrope-like fragrance. The other is Odontoglossum citrosmum, one of the few Odontoglossums that succeed well suspended in the Cattleya house, and the drooping racemes of which are very effective. Mr. Mumford remarks that the Cypripediums potted earlier in the year are doing well, and C. Harrisianum is coming into bloom again.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

C.H.L.—We find no record of the name "Oncidium cirrophorum." A few dried flowers would probably serve to identify it, as also of the Epidendrum. 33 is probably Stelis leucopogon, Rchb. f., 34, Masdevalia demissa, Rchb. f. Please enclose flowers in a small fold of blotting paper, as they stick to the letter or get broken in the folds.

J.D.W.— Many thanks. We will try what can be done.

E.W.—A note on the subject appears in the present issue.

H.E.—Orchis incarnata, L., has pale flesh-coloured flowers, and blooms rather earlier than O. latifolia. The trouble is that some of the records and figures are incorrect. Yours is the purple O. latifolia.

An enquiry respecting an Orchid house will be found on p. 3 of the Wrapper.

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VOL. XXVI. JULY—AUGUST, 1918. No. 307-308

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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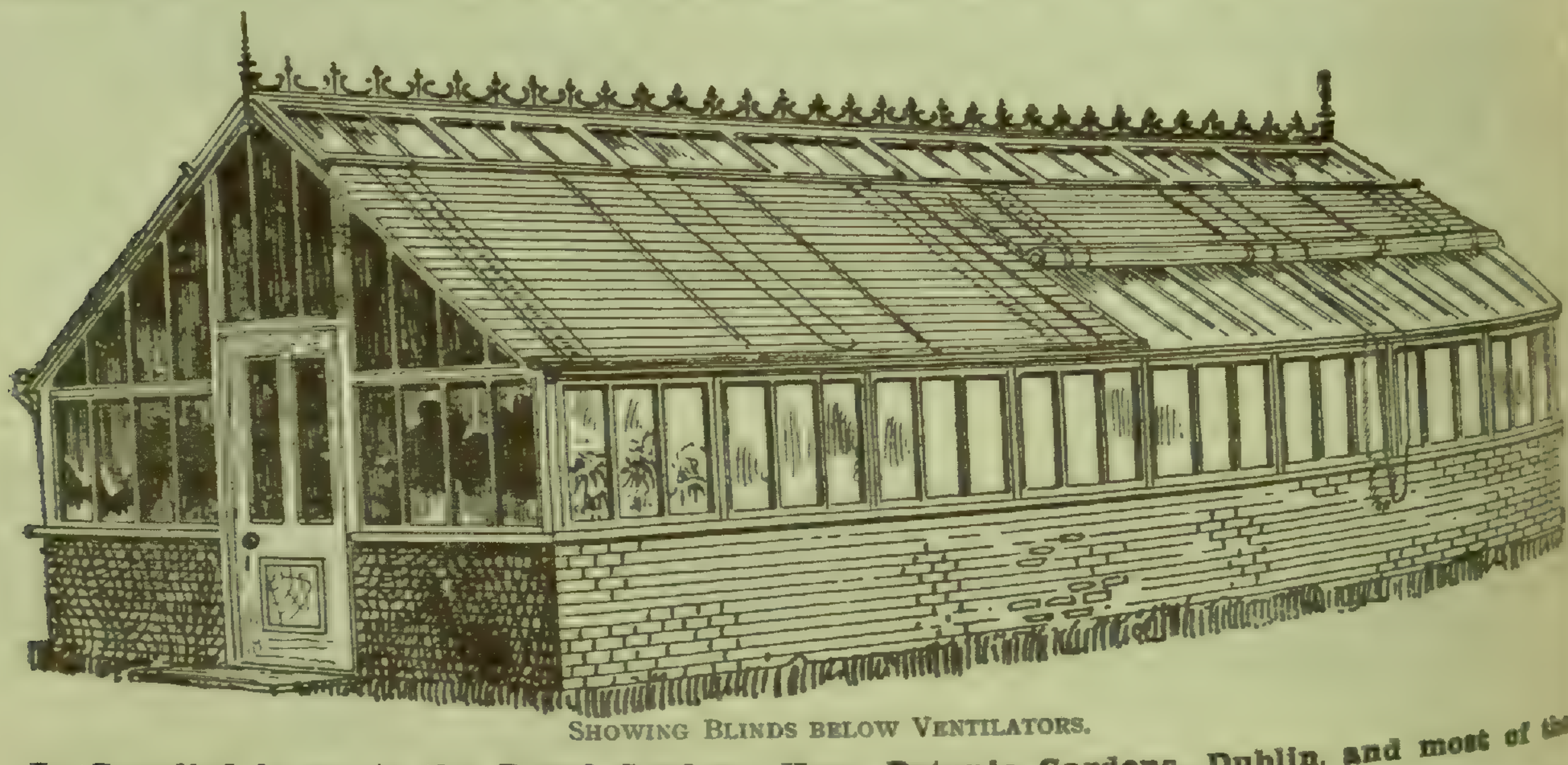

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The Orchid Review

VOL. XXVI. JULY-AUGUST, 1918. NO. 307-308.

OUR NOTE BOOK.

THE completion of the twenty-fifth volume of the *Orchid Review* naturally led to a summary of the progress of Orchidology during the period, and the stress of the abnormal conditions caused by the war has delayed the resumption of our notes in their usual form. A summary of the events of the past year may seem a little out of date, but a rough draft was prepared, and the record of progress must not be lost.

The railway transit difficulties which led to the abandonment of the R.H.S. Chelsea and Holland House Shows, and the change of venue from the Royal Horticultural Hall to the London Scottish Drill Hall, naturally led to a considerable curtailment of exhibits, especially as regards groups, consequently there was a considerable reduction in the number of Orchids certificated during the year, the numbers being nine First-class Certificates, forty-three Awards of Merit, fifteen Preliminary Commendations, and four Cultural Commendations, these with very few exceptions being hybrids or seedlings of garden origin, showing the extent which selection of parents now plays in the improvement of garden Orchids.

The awards were pretty evenly distributed through the usual showy genera. The recipients of First-class Certificates were Brassocatlælia Lady Manningham Buller, Brassocattleya Lady Veitch, Cattleya Astron The Dell var., Cypripedium Eurybiades The Baron, Eulophiella Rolfei, Læliocattleya General Maude, Odontioda Coronet Orchidhurst var., Odontoglossum crispum The Premier, and O. Felicity. The Award of Merit was given as follows: Cattleya and Læliocattleya, eight each, Odontioda, six, Cypripedium, Miltonia and Sophrocatlælia, four each, Brassocattleya and Odontoglossum, three each, while Cymbidium, Dendrobium, and Sophrocattleya each contributed a single representative. It is interesting to note that as many as twenty-two of these are generic hybrids. The Preliminary Commendation is naturally limited to hybrids, and was largely monopolised by Odontoglossum, with twelve representatives, the allied Odontioda gaining two, and Miltonia one, all being seedlings which are

undeveloped at their first time of flowering. The Cultural Commendations were given to exceptionally fine specimens of Cattleya Astron, Dendrobium acuminatum, Epidendrum polybulbon and var. album, and Odontioda keighleyensis.

The Manchester and North of England Orchid Society had another successful year, and a large number of brilliant Orchids gained Certificates, which we have not attempted to summarise. The extent of the groups has naturally suffered by the abnormal conditions, but the interest is kept alive by a series of annual competitions, which terminate with the close of the session in May, when the results are announced. There has also been plenty of evidence of the progress made by hybridisation and selection, which only await the return of normal times to resume their full activity.

A large number of new hybrids have flowered for the first time, the majority being further crosses among existing hybrids, raised along definite lines with the object of obtaining improvements in form and constitution, increasing the range of colour or the number of albinos, and extending the flowering season, in all of which steady progress is being made. Colour developments have been the subject of many experiments, and experience is being gained as to the lines along which improvement is possible, as among the Odontiodas, and in the further crossing of the hybrids of Sophronitis grandiflora with the showy Cattleyas and Læliocattleyas. The work is subject to many limitations, and has to be carried on with much care in the selection of parents so as to retain the colour improvements already effected. The search for yellow in the Cattleya group has been rewarded by at least one brilliant acquisition, in Brassocatlælia Lady Manningham Buller, in which the yellow of Lælia xanthina was combined with qualities derived from Cattleya Dowina aurea, the albino C. Mossiæ Wageneri, and Brassavola Digbyana. The immediate parents were Læliocattleya Ophir and Brassocattleya Veitchii Queen Alexandra, and the cross will doubtless be repeated, but other crosses of Lc. Ophir may be expected to yield similar results as regards colour. It is largely a question of time and continued experiments.

Losses during the year were heavy, and include the veteran Mr. O. O. Wrigley, an Orchid cultivator of fifty-five years standing, Mr. Elijah Ashworth, another old and enthusiastic Orchidist, and M. Oscar Fanyau, the raiser of the beautiful Odontonia Fanyauiana and O. Cleverleyana, a veteran victim of the war. Mr. William Thompson, who passed away a few days before the end of the previous year, at the age of 84, left another great blank, for he had been an enthusiastic Orchidist, and especially a

keen lover of Odontoglossums for nearly half a century. The death of Mr. William Marshall recalls the flowering in his collection of the first plant of Odontoglossum crispum, as long ago as April, 1865, though the collection was long ago dispersed, and that of Mr. Charles Winn recalls the dispersal of the Selly Hill collection in 1896.

Some time ago a correspondent raised a question about the new edition of *Pritzel's Icones*, and now that the work is in active preparation we may usefully call attention to the matter. It relates to numerous Orchids that have been figured under erroneous or obsolete names. To take the case of Lycaste, if one turns to the old edition it might appear that the species, L. aromatica, Barringtoniæ, cruenta, Deppei, and macrobulbon had never been figured, yet all of them appear under Maxillaria, if one only knew where to look. And there are figures of Maxillaria atropurpurea, Harrisoniæ, and racemosa, which belong to Bifrenaria, of M. Steelei, which belongs to Scuticaria, and of M. Warreana, which belongs to Warrea, all of which might be overlooked by anyone not well versed in synonymy. Many other cases could be cited.

The question now is, how are these plants to be indexed under their modern or correct names? We would suggest a system of cross references, since all must presumably be inserted under the names under which they were actually published. For example, "Lycaste cruenta, see Maxillaria"; "Warrea tricolor, see Maxillaria Warreana" (the specific name being added whenever different). It would naturally entail a little trouble, but it would be worth it, and the opportunity of effecting such a great improvement should not be lost. The majority of such cases are already recorded, and could easily be inserted during the ordinary process of compilation, or at all events during the final revision of the genera before printing.

The above are examples of obsolete names; true corrections might give more trouble, but many of these are on record. There is a figure of Odontoglossum bictoniense at t. 3812 of the *Botanical Magazine*, but it is not recorded in Pritzel, the reason being that it was figured under the erroneous name of Zygopetalum africanum. The obvious remedy is to insert a cross-reference, as above-indicated. It is only one of a large number of cases, and as the object should be to make the work as useful as possible, one need not be deterred from making the improvement by the possible objection that some of the corrections might be overlooked.

How far the multitudinous hybrids and varieties of garden origin are to be included we do not know, but in an edition compiled largely in the

interests of horticulture they can hardly be ignored. An interleaved copy of Pritzel at Kew has been kept posted up, so far as important figures are concerned, and contains thousands of entries, but varietal names, we believe, have not been included, while hybrids named only in the vernacular have been omitted, so that large additions may have to be made. The *Orchid Stud-Book*, we may point out, contains the figures of hybrid Orchids to the end of 1907.

A concise Index to the multitude of figures that are scattered through botanical and horticultural works would be a boon, but would be a rather extensive affair, unless some method of selection can be adopted by which duplicate presentments of the same plate or figure, when unduly numerous, can be omitted. It would give some trouble in compiling them, but the line may have to be drawn somewhere, in order to keep the work within reasonable limits.

CIRRHOPETALUM SARCOPHYLLUM, King & Pantl.—A very distinct species of Cirrhopetalum is flowering at Kew that we do not remember to have seen recorded as in cultivation. It was described in 1895 from specimens collected at Rishap, Sikkim, at an elevation of about 2,500 feet (*Journ. Asiat. Soc.*, lxiv. p. 335), and afterwards figured (*King & Pantl. Orch. Sikkim*, p. 91, t. 126), when the altitude was given as from 3,000 to 5,000 feet, the plant flowering from June to September according to elevation. Four years ago a Cirrhopetalum that had been obtained from Messrs. Sander & Sons flowered at Kew, which was obviously very similar, but as it was said to have been obtained from the Salween River district, between Burma and Siam, it was not certainly identified. And now another plant has flowered at Kew, this having been sent by a Mr. Light, who is believed to have collected it somewhere in the Moulmein district. On further comparison of the cultivated plants it is evident that both must be referred to C. sarcophyllum. It is a plant of very distinct habit, with slender creeping rhizomes, and pendulous, very fleshy leaves, oblong to elliptical in shape, and three to six inches long. The flowers are borne in umbels of four to six, and are mottled with reddish brown on a greenish ground, the dorsal sepal being distinctly striped, and the fleshy lip dotted with purple on a lighter ground. King and Pantling remark that it is a species with a considerable vertical distribution, and that at low elevations it appears as a dwarf, to which dwarf form they have given the name of variety minor. This is said to be found close to the plains, at elevations of 1,000 feet, and that it is not connected with the type by transition forms. Specimens of both forms are preserved at Kew. Pendulous leaves are not common in the genus.—R.A.R.

NOTES FROM KEW.—VII.-VIII.

THE height of summer was formerly a rather quiet season, so far as showy Orchids were concerned, but intensive hybridisation has changed all that, and the interval between the spring and autumn-flowering Orchids is now bridged over by a host of showy hybrids that are accessible to everyone. And the blank was never so marked where numerous species are grown, as in such a collection as that at Kew, for there are plenty of summer-flowering species, though, with a few exceptions, they are seldom grown in quantity.

Passing over the showy hybrids, of which numerous examples are to be seen, we may mention a few of the more interesting species now in bloom or that have flowered since our last notes. One of the most interesting at the present time is the unique plant of Stauropsis Imthurnii, Rolfe, which is now bearing a large panicle, with about fifteen side branches of cream white flowers, with a yellow crest, and some violet-blue veining on the lip. This plant is a native of the Solomon Islands, and was brought home by Sir Everard im Thurn. It flowered at Kew in 1916, and was figured at t. 8714 of the *Botanical Magazine*. It may fairly be described as one of the giants of the family, for the leaves and inflorescence are about four feet long. Other representatives of the same group are Aërides odoratum, Rhynchostylis retusa, Vanda Kimballiana, and a few good plants of V. cœrulea, while several plants of the long-lost Doritis pulcherrima (see *O.R.*, XXV., p. 195) are throwing up numerous flower spikes. Several additional spikes have appeared on plants of Stanhopea inodora and S. oculata.

The Cattleya group is represented by good examples of C. Dowiana and C. Warscewiczii, with two strong plants of C. Grossii, an ally of C. bicolor, while two examples of the very distinct Lælia crispa are also blooming freely, and Brassavola Digbyana is bearing one of its striking flowers. Epidendrum is represented by E. prismatocarpum, E. Brassavolæ, and E. Harrisoniæ, the latter a Brazilian species that is seldom seen nowadays Near by are plants of Oncidium incurvum, oblongatum, trulliferum, and Wentworthianum, with an example of the graceful Brassia longissima, while several interesting botanical species have flowered on the stage over the water tank.

In the Cool house are plants of Anguloa Clowesii, A. Ruckeri, and A. brevilabris, the latter an interesting species which came home with A. Cliftonii. There are also plants of Masdevallia corniculata and M. inflata, the rare Maxillaria fucata, Odontoglossum grande, and a few others, but most of the inmates of this house are now out of bloom. The Brazilian

Miltonias, however, are just beginning to flower, and will make a good display during the autumn.

A few other interesting things may be mentioned, as Dendrobium regium, a handsome summer-blooming plant, Eria rhynchostyloides, a Javan species that is again producing numerous spikes, though the flowers do not last long, Cœlogyne speciosa, and the rare C. corrugata. The striking Bulbophyllum virescens is also throwing up two strong inflorescences, and the rose-coloured Cœlia macrostachya is again showing for bloom. Hardy Orchises, which made such a show on the rockwork, are now over, the last of the series being Orchis pyramidalis, with ovoid heads of bright rose-purple flowers.

ANGULOA BREVILABRIS, Rolfe.— Some additional plants of this interesting Anguloa have appeared in cultivation, flowers having been received for determination from the collections of Mrs. E. J. Thatcher, Chew Magna, Somerset, and of W. Bolton, Esq., Wilderspool, Warrington. A third has flowered at Kew, this having been obtained under the name of A. Ruckeri. The true A. Ruckeri also flowered at Kew a few days later, affording materials for comparison. The history of A. brevilabris was given three years ago (*O.R.*, xxiii. p. 292). Some plants of a red-flowered Anguloa, that had been imported with A. Cliftonii, were exhibited at the Holland House Show by Messrs. Sander and Sons, under the name of A. Ruckeri, and the general similarity to that species was so great that no difference was noticed. The point of interest then was that a natural hybrid flowered out of the importation, and was exhibited by Messrs. Sander (together with both its parents) under the name of Anguloa Rolfei (*O.R.*, xxiii. p. 255). A plant from the same importation also flowered in the collection of Walter Cobb, Esq., and a flower was submitted for determination, when it was noticed that the lip was totally different in structure from A. Ruckeri. And as A. Cliftonii is a native of the western Andes of Antioquia, it was obvious that the habitat was also different. This led to the examination of a plant which Lehmann had collected, in September, 1891, between Cativo and Buritica, on the western Andes of Antioquia, and on soaking out a flower of this the lip was seen to be identical in structure. The western plant has very broad, truncate side lobes, and a very short, obtuse front lobe, while in A. Ruckeri the side lobes are rounded and the front lobe longer and acute. A. Ruckeri is a native of the eastern Cordillera of Columbia, between Pamplona and Bucamaranga, where A. Clowesii also grows, and it is a curious coincidence that here also a natural hybrid occurs, namely A. media, Rchb. f., which had previously been obtained by intercrossing A. Clowesii and A. Ruckeri (see *O.R.*, i. p. 40).—R. A. R.

ORCHIS HEPBURNII.

THE history of the interesting natural hybrid Orchis folioso-maculata was given at page 125, also that of O. Hepburnii, then regarded as a closely allied hybrid, but which, from information since received, appears to be synonymous with the preceding. About the middle of June last, Sir Archibald Buchan Hepburn sent a fine living plant to Kew—which was planted on the rockwork—and gave its history as follows:—"It is a natural hybrid that appeared on the lake bank at Smeaton some four years ago. Mr. Druce regarded O. latifolio-maculata as one of the parents, but I do not think that O. latifolia has anything to do with it, and that is Mr. T. A. Stephenson's opinion also, but he adds that the specimen of O. maculata that I sent him is the variety O. Fuchsii, Druce. There are perhaps a dozen plants, growing in very wet soil on the bank, below the level of the O. foliosa parent."

About a fortnight later two fine specimens, including part of the basal leaves, were sent for preservation, and it was pointed out that one had spotted, the other unspotted leaves. Both of these inclined most to the O. foliosa parent in the size and colour of the flowers. A few days later another specimen was sent, which was much nearer to O. maculata in the shape of the spike and flowers, and in colour, though the plant was intermediate in other respects. With this specimen came a good plant of the other parent, and this was the familiar O. maculata, L., which is common in the district, and which, as previously pointed out (*O.R.*, xxiii., p. 253), has been redescribed under the name of O. Fuchsii. It is highly satisfactory to have the complete history of the plant and such excellent materials for preservation. As to the amount of variation, it is largely a repetition of Mr. Wolley Dod's experience, for he remarked that plain and spotted leaves were equally common. It thus appears that the record, O. foliosa × latifolio-maculata, requires to be amended to O. foliosa × maculata, but that the specific name, O. Hepburnii, Druce, can be retained, none having been originally given by Mr. Wolley Dod. For those who prefer the graphic system of indicating the parentage in the name, O. folioso-maculata is available, but there is the limitation that it is too unwieldly for secondary hybrids, and even for primary hybrids it requires change with any necessary amendment of parentage, besides being impossible in the case of hybrids of unknown origin, many of which were originally described as species. In the present case the acceptance of O. Fuchsii as a parent would involve a change of name, but this we do not admit, for there is no doubt that the O. maculata, L., is the familiar plant that has always been understood by the name.

R.A.R.

STANHOPEA EBURNEA.

THE Stanhopeas are among the most remarkable of summer-blooming Orchids, being both quaint in habit and floral structure, and their flowers are large and striking, though not lasting long in perfection. The species are now rather numerous, and the one here figured is believed to have been the first to be introduced to British gardens, having been sent to Messrs.

Fig. 16. STANHOPEA EBURNEA.

Loddiges from Trinidad, in 1824, by Sir Ralph Woodford. The species was afterwards introduced from Brazil, Guiana, and Venezuela, and there are also records from Columbia, and Peru, which, if correct, give the species a very wide diffusion. Messrs. Veitch speak of the Brazilian records as erroneous, but according to Mr. E. S. Rand it is one of the common Amazonian Orchids that flourished in his garden at Pará. The flowers are

ivory white, with some purple markings on the lip, and they possess a strong aromatic fragrance. Practically nothing is known about the fertilisation of this remarkable genus, but Crueger has recorded that in Trinidad, S. eburnea is visited by the same bee that fertilises Catasetum macrocarpum and Gloxinia maculata, and he has caught it with the pollen masses of the plant on its back, though he cannot see how it can insert the same into the narrow stigma. The insect is attracted by the scent, but remains for the purpose of gnawing off some substance from the labellum. It would be interesting if some of our Orchid growers in the tropics would observe the method of fertilisation of this remarkable genus. Stanhopeas are of the easiest possible culture, and succeed well when grown in baskets of fibrous compost, and suspended from the roof of the warm Intermediate house. Basket culture is necessary, because of the pendulous nature of the spikes.

BRITISH ORCHIDS FROM SEED.—Very little, we believe, has been done in the way of raising hardy Orchids from seed, but the possibilities of the case are indicated by the following note in the *Phytologist* (i. p. 62) that we have just stumbled across. There are two or three British natural hybrids that might possibly be confirmed by an application of the method. "From the commencement of the Birmingham Garden we have cultivated, with tolerable success, such of the British Orchidaceae as we could obtain, and have preserved some species for several years without being obliged to procure a fresh supply from their native places of growth. They are grown in pots placed with our alpine plants; and about six years ago I was agreeably surprised at seeing some self-sown seedlings in several of the pots with the alpine plants, some of them being very small, and evidently seedlings of that year, others were much stronger. Of plants so obtained we have flowered several fine specimens every season for the last three years; some of them were permitted to flower where they came up, others were transplanted singly into pots, and all flowered equally well. They mostly are to be found with such alpine plants as have leaves covering the pots in winter in a living state, so as to ward off a portion of the rain, or in pots where the plants have a mass of roots to answer the same purpose, by absorption of the superabundant moisture. The species which have flowered from self-sown plants are Gymnadenia conopsea, Orchis maculata, and O. latifolia,—the latter being most abundant. As far as I can ascertain they flower the third year after their appearance in a seedling state.—David Cameron, Botanic Garden, Birmingham, August 15th, 1841." Possibly a cold frame would assist in providing the necessary protection, for we have personally tried to raise the cross between O. latifolia and O. maculata, also between O. foliosa and a pure white maculata, but the seeds failed to germinate.—R.A.R.

CALENDAR OF OPERATIONS FOR JULY-AUGUST.

By J. T. BARKER, The West Hill Gardens, Hessle, E. Yorks.

THE climate conditions continue satisfactory for the cultivation of all kinds of Orchids. The amount of light we have enjoyed this season has been most beneficial, and the plants show their appreciation by throwing up strong, sturdy growths. The most should now be made of the increased solar heat, so as to consolidate and mature the new pseudobulbs, and thus ensure satisfactory flowering later on. The temperatures and general treatment as advised in the two previous Calendars should be continued, except that the treatment should be more liberal. Evaporation being more rapid, greater humidity may be maintained in all the houses. With the increased heat of the sun, the maximum amount of ventilation may be indulged in, and the shading of the plants must have close attention, as the young growths soon scorch if exposed to the sun's rays, and may be permanently injured or lost.

WATERING at this season will absorb much time. Those plants which are in full growth, and are well rooted in the compost, should receive liberal supplies whenever they become dry. Plants which have been recently repotted, or that have recently passed out of bloom and have not yet commenced to grow vigorously, should be watered with more caution, but still should not be allowed to suffer for want of it.

POTTING.—Last year, owing to the shortage of labour and material, I advised to hold over for a season the potting of all plants that were growing in a sweet and healthy compost, repotting those in which the rooting materials had become decomposed. As this difficulty is even more prevalent this season than last, I suppose I must renew it; at the same time I would impress upon all the dangers attending neglect in this respect. My experience teaches me that the decline in health and vigour is attributable in the first case to neglect, through a shortage of labour or material, to renew the rooting medium at the first stages of decomposition, the plant having lost its roots and its vitality through that cause. Efforts must therefore be made to renew such compost as is in decomposing condition, and to keep the new compost sweet as long as possible. I have frequently urged the necessity of the careful use of the waterpot upon newly potted plants, and I would here reiterate it, as I consider it of the greatest importance, for the best compost ever put together may be ruined in a very short time by the faulty and over indulgent use of the water can.

LÆLIAS.—The Mexican Lælias, which produce their flowers at the Christmas season, when flowers of every description are doubly valuable, are now in full growth, and the bright weather we have recently enjoyed is

entirely to their liking. They delight in light, air, and abundance of water whilst making their growth, after which a decided season of rest with only sufficient water to prevent shrivelling should be given. These plants are good examples of plants losing their roots and vitality by improper watering, especially during the winter months. They are not so popular at the present day as their merits deserve, as there is sufficient variety to make them interesting, and where they have been used as parents, crossed with Cattleyas, they show promise in the future of making a distinct class of Orchids. The cool-growing members of this genus, such as L. pumila, præstans, Jongheana, and Dayana, are also developing new growths. During the hottest part of the year a light position should be given them in the Cool house, where they will thrive much better than in the Intermediate house. They may remain there until they commence to show their flowers, when they may be returned to the drier and warmer conditions of the Intermediate house for the winter months. These plants make suitable plants for those who indulge in the cultivation of a few Orchids in a small house of warm greenhouse temperature. There is a lot of enthusiasm over the slightest success with this class of amateurs, who grow flowers for the pure love of them.

LÆLIOCATTLEYAS AND ALLIES.—The general principles of culture laid down in previous Calendars, may be applied to the numerous varieties of this large and popular group.

CATTLEYAS.—C. Gaskelliana, C. labiata, and the late flowering varieties of C. Warscewiczii (gigas), which make their growths during the late spring and summer months and produce their flowers during the autumn, are in an advanced stage, and already their pseudobulbs and flower sheaths are formed. They must not be allowed to suffer for want of moisture at the roots, and should be placed in a position where they may receive the full benefit of light and air to consolidate their growths. As soon as these are mature, and the flowers commence to open, much less water at the roots will suffice. C. Mossiæ and C. Mendelii, with their numerous varieties, both white and coloured, have passed out of bloom. After enjoying a short rest they will commence to push forth new roots, when any necessary repotting may be undertaken. These fine species enjoy the coolest position in the Cattleya house, and soon decline in vigour if subjected to a high temperature. There is enough variety in these two species of summer-flowering Orchids to make their culture most interesting, and they comprise the most useful members of this large genus. Having devoted much time and attention to the close study of the cultivation of this class of plants, I would point out that the chief essentials to success are, firstly, a buoyant healthy atmosphere, secondly, a sweet clean fibrous rooting medium, and thirdly, an intelligent application of water to the roots and in the atmosphere during their respective seasons of growth and rest. Finally,

scale and other insect pests must be removed at all costs, or else the plants will suffer.

SOBRALIAS are, as a rule, easily grown plants, but resent being disturbed at the roots, therefore should have special care when potting becomes necessary. When they cease flowering, any that are declining in vigour, or that from any other cause are in need of new material, may have attention. A mixture of good fibrous loam and peat, with a sprinkling of broken crocks to keep the whole porous, makes a suitable compost. They should be potted moderately firmly, and water must be sparingly applied to them until the new roots get into action. Spraying or sryinging once or twice a day will assist the plant in recovering, and also be the means of preventing attacks of thrip and red spider, which will attack the leaves if the atmosphere is too dry. Sobralias thrive best in the Cattleya house, and when their growth is completed enjoy a fairly dry resting season, but having no pseudobulbs, this must not be carried to extremes. Plants that have lost their centres are best divided, placing them into the smallest pots possible.

CYPRIPEDIUMS of the green-leaved section have now filled their pots with roots, and must have copious supplies of water, as if allowed to become dry for any length of time they are readily attacked by thrips, which soon disfigures the foliage. Recently I have had this fact forcibly brought under my observation, as the shortage of labour prevented some of these plants getting the necessary attention.

ODONTOGLOSSUM CRISPUM AND ALLIES.—At the present time there is so much diversity, both in form and colour, in this most beautiful group, that in many cases it is hard to say which are hybrids and which are species, and from a cultivator's standpoint this does not matter, as all produce beautiful flowers. Towards the end of August a start should be made to repot any Odontoglossums of this section that require it. All those plants of which the new growth has attained the length of several inches, and are about to produce new roots, should have attention first, to be followed later by others as they reach this stage. As many as possible should be repotted now, as the plants quickly re-establish themselves. Large pots should not be used, and the old rootless and leafless pseudobulbs should be removed. These may be used for propagation, and if the eyes are good will soon start into growth if placed on any damp material, such as a layer of sphagnum moss, and sprayed from time to time.

COMPOSTS.—A variety of composts have been recommended for these Orchids, and good examples are to be found growing in all the different materials used by Orchid growers. Personally, I have not succeeded with Osmunda fibre as well as with other materials, and I still adhere to the following mixture, namely: equal parts of peat, AI fibre, and sphagnum

moss, with a slight addition of broken leaves. The AI fibre makes the compost more durable, and prevents the peat fibre from decaying so rapidly and becoming a decomposed mass. It is false economy to neglect the repotting of any Orchid whenever it needs it, as if a plant is not worth repotting it is not worth keeping. The newly-potted plants should be cleaned and placed by themselves, where their individual requirements can be treated and studied, especially in regard to watering, shading, and spraying.

WATERING.—In most cases, the failure to grow these plants satisfactorily is attributable to too much water at the roots, and to the atmosphere being kept continually in a saturated condition. Nothing is more conducive to healthy growth than allowing the atmosphere to become comparatively dry for an hour or two each day.

COCHLIODAS and their hybrids succeed under similar conditions and in the same material as Odontoglossums. There are now so many fine hybrids which have been raised from Cochlioda crossed with the species and hybrids of Odontoglossum that the greatest difficulty is to trace their ancestry. In a family so large and varied, individual plants will vary slightly in constitution and vigour, but close observation will soon teach one their requirments, and as none are especially difficult to cultivate, they may be taken in hand by anyone. They supply a colour which is not obtainable from any other source, and we may safely assume they will enjoy extensive culture in the future.

MILTONIA VEXILLARIA.—Plants of this species, and of the hybrids which produced their flowers early in the season, are now commencing to grow actively, and those that require fresh rooting material may have attention as they reach the desired condition. The later part of July and the beginning of August is the best time of the year to repot or disturb the early summer-blooming varieties. With the aid of the late summer-blooming forms and the autumn-blooming ones it is possible to maintain a display of their beautiful flowers for fully six months of the year. The repotting of the late-flowering varieties is best deferred to a later period, but as they succeed in the same material and under the same conditions, their culture is similar, except that, being later in making their growth, they require attention accordingly. Being surface rooters, they are best grown in half-pots or deep pans, and will succeed in a similar compost to that used for Odontoglossums. Water must be sparingly applied to the newly-potted plants until the new roots freely enter the new material. A moist position in the Intermediate house, where they can be shaded from strong sunshine, answers their requirements at this season. Unsuitable atmospheric conditions must be avoided. Too much heat will result in an attack of thrip and other insect pests, and the young growth will damp and fall off in too cold and damp a situation.

MILTONIA BLEUANA, and other hybrids in which M. Roezlii is one parent, enjoy slightly more heat than M. vexillaria, therefore are best grown in the warmest part of the house, or in a house where a few degrees more heat is maintained. As regards other matters they succeed under the same conditions as M. vexillaria.

TRICHOPILIAS comprise a beautiful and easily grown genus of Orchids. T. nobilis and T. fragrans are autumn-flowering species which produce their fragrant flowers in profusion at a season when flowers are acceptable. They succeed and grow freely in a cool Intermedtate house, suspended from the roof, and are best grown in half-pots, which must be well drained. They succeed in a similar compost to that used for Miltonia vexillaria. T. suavis, T. coccinea, T. Backhouseana, and others which have flowered, and are now pushing new growths, may now have any necessary repotting done.

PLEIONES.—In the Cattleya house the Pleiones will now be completing their new growths, and will need more light and air to consolidate the bulbs. Sufficient water must be given to keep the compost moist. The cool-growing varieties, P. humilis and P. Hookeriana will require liberal supplies of water until their growths are completed. The position most suitable to them is one close to the roof ventilators of the Cool house.

EPIPHRONITIS VEITCHII.—At the present time these plants are producing a number of aërial shoots from the flowering growths. Such growths should now be taken from the parent plant and potted several together, when they will form nice little specimens. This, like Sophronitis, is a plant that many fail to grow satisfactorily, owing in many cases to receiving too much heat. It is best grown in shallow pans, and delights in a fairly moist position near the glass, with an even temperature the whole year round.

ONCIDIUMS.—During the present period there are many of the cool Oncidiums that may require attention as regards repotting. The young growths should be some three or four inches in length, and about to push forth new roots, when this is attempted, as they suffer less at that stage than at any other. They should be placed in small receptacles, and a similar compost to that used for Odontoglossums, with slightly more broken leaves added, makes a satisfactory rooting medium for them. The warmer-growing members of this large and varied group of plants may also have attention as regards repotting, should they require it, when they reach the desired condition. These plants revel in a hot humid temperature whilst making their growth, and afterwards a season of rest. The thick-leaved varieties are capable of standing a long, dry rest, and too much water at that season causes the roots to decay, with the attendant loss of vigour. The cool-growing O. macranthum, and allied species that are in bloom, or developing flower spikes, should have water supplied to them whenever they become dry. This section of the genus resents dryness at the roots or in

the atmosphere at this season, and soon becomes a victim of unhealty atmospheric conditions.

DENDROBIUMS of the deciduous section are in full growth, and should be liberally treated, so as to induce them to build up stout healthy growths. The repotting of the evergreen section, of which D. thrysiflorum is the best known variety, should by this time be completed. The cool-growing species, such as D. Jamesianum, infundibulum, and others, may be repotted, if necessary, as they pass out of flower, and commence to grow. The compost must be made quite firm, as few Orchids thrive satisfactorily if potted loosely in the material now available. In repotting all Orchids, consideration should be given to the fact that the plants must have sufficient time to re-establish themselves before their next flowering season. The production of flowers on a poorly-rooted plant in many cases means the life of it, therefore it is much the best to remove the flower spikes and save the plant the effort.

ODONTOGLOSSUMS of the O. grande section are now growing freely, and any that require new rooting material should be attended to. A very porous compost is necessary to their well being, as their thick fleshy roots, so different from other Odontoglossums, are not capable of pushing through a close compost. These plants require copious waterings when in full growth, but water should pass quickly through the compost, as the roots quickly decay in a close or saturated material.

GENERAL REMARKS.—The work for the present will consist mainly of the general routine of potting, watering, cleaning, &c., so as to ensure a full season's growth before the return of the dark days of winter.

Before this appears in print the collection of which I have had charge for nearly a quarter of a century will have been dispersed, and to me it is like parting with old friends. But such changes are inevitable, and the plants will doubtless find a suitable home elsewhere.

PRICKING-OFF SEEDLING ORCHIDS.—The best time to prick off seedling Orchids is when the first or second leaf is mature and the first tiny root beginning to push. They will then quickly take hold of the new compost and establish themselves. A small pointed stick forms a good tool, and care must be taken not to injure the seedlings during the operation, as they are very delicate. The compost should be fairly moist, and a light spraying should afterwards be given to settle them. Shading with a piece of light tissue paper for a few days is also beneficial. If the seeds should germinate too thickly, as is sometimes the case, it may be advisable to remove some of the seedlings a little earlier, in order to prevent them from damping off. As the tiny pots dry very quickly, it is a good plan to place several together in pans of some moisture-retaining materials, these being placed in suitable positions in the house.

ODONTOGLOSSUM SMITHII.

THE hybrids of Odontoglossum Rossii with the Colombian Odontoglossums form a very distinct and natural little group, and invariably show much of the influences of the Mexican species. O. Smithii, which is here figured, was the first of the series, and was raised by Messrs. Charlesworth & Co., the pollen parent being O. spectabile (crispum X Harryanum). It flowered in December, 1905, and received a First-class

Fig. 17. ODONTOGLOSSUM SMITHII.

Certificate from the R.H.S. The plant is dwarf and compact in habit, and the flowers are borne in short spikes, and combine well the characters of the two parents. The colour is remarkable, the sepals and petals being greenish yellow, with a strong suffusion of violet-purple round the margins and at the apex, while the blotches are blackish purple. The front lobe of the lip is suffused with violet-purple, and there are a few dark blotches

round the crest, which latter consists of several acute teeth, recalling O. Harryanum in character. It is a very handsome hybrid, and more brilliant in colour than would appear from the photograph, which represents the original certificated plant.

ODONTOGLOSSUM JEANETTE (fig. 18) was also raised by Messrs. Charlesworth, and received a First-class Certificate from the R.H.S. in March, 1911, the plant then bearing an inflorescence of four flowers. In this case O. amabile heatonense was the pollen parent, but the influence of O. Rossii largely preponderates, particularly in the shape of the lip and crest, that of O. amabile being chiefly apparent in the increased number of

Fig. 18. ODONTOGLOSSUM JEANETTE.

purple-brown blotches on the petals. The margins of the petals are also suffused with violet-purple. The large, rounded front lobe of the lip is carmine-purple in colour, with a bright yellow area surrounding the prominent fleshy yellow crest. The column also recalls O. Rossii in shape. The hybrids of O. Rossii now form a numerous series, over a dozen combinations with other Odontoglossums having been raised, as well as three Odontiodas, one of these being a primary hybrid with Cochlioda Nœtzliana, and the other two secondary crosses with Odontioda parents. The type of O. Rossii generally used is the richly-coloured variety rubescens, and further interesting developments may be expected.

THE BRITISH MARSH ORCHISES.

EARLY in June last we received from Mr. T. A. Dymes, F.L.S., West Drayton, Middlesex, living plants of two Orchises that he had found in a marshy meadow there, and he mentioned also finding a natural hybrid between them. The plants sent were immediately recognised as O. latifolia and O. incarnata, the two species recorded by the late Mr. C. B. Clarke, F.R.S., over a quarter of a century ago, as plentiful in the marshes of the River Test, in Hampshire. They are also recorded by Babington as found in peat holes at Triplow, Cambridgeshire. The Hampshire locality is Bransbury Marsh, where also O. maculata occurs, and examples of all three species from Mr. Clarke are preserved at Kew. The existence of natural hybrids at Bransbury has long been suspected, but Mr. Clarke was always sceptical on the point, and no opportunity presented itself to the writer of investigating the question on the spot. But the Middlesex locality is more accessible, and we gladly accepted Mr. Dymes' invitation to visit the spot with him on June 16th, the result being that we found both the species and the natural hybrid above mentioned.

The locality is a typical swamp, with sedges, Myosotis palustris, Veronica Beccabunga, and other marsh plants in the wetter parts, and the soil black and spongy. The Orchises grow for the most part among grasses bordering the more swampy parts, where the soil is saturated with water. O. latifolia was quite common, many plants being frequently present in a few square yards of ground. This is the plant known as the Broad-leaved Marsh Orchis, the leaves being unspotted and the flowers dark purple. O. incarnata, has flesh-pink flowers, and narrower, unspotted leaves, and was far less common, being found here and there, with occasionally two or three plants together. Mr. Dymes, however, remarked that a fortnight earlier it was three or four times as common, for it commences to bloom at least ten days earlier than O. latifolia, and is also somewhat dwarfer, so that by this time some of the flowers were over, and the plants better concealed by the surrounding herbage. Of the hybrid several examples were found, these being recognised by their intermediate character, and the way in which the features of the two species are combined was better made out by subsequent detailed comparison. This is the plant known on the continent as O. Aschersoniana, and its history is as follows:—

ORCHIS ASCHERSONIANA, Hausskn.—The hybrid between O. latifolia and O. incarnata was recognised by F. Schultz as long ago as 1863, when it was called O. latifolio-incarnata, and was said to be rare in alluvial soils in the Rhine valley; the two parents being also enumerated (*Pollichia*, 1863, p. 234). Max Schulze afterwards gave some additional localities, but has

coloured figure (*Orch. Deutsch.*, t. 19 b.) shows some spots in the leaves, suggesting the secondary hybrid between O. incarnata and O. Braunii. Indeed the figure he calls O. latifolia, L. (t. 21), seems to represent O. Braunii, a hybrid between O. latifolia and O. maculata, which Barla has also figured as O. latifolia. O. Aschersoniana, Hausskn., was described in 1885, but we have not been able to consult the description. Camus, however (*Monogr. Orch.*, p. 239), refers it here, though in an earlier paper (*Journ. de Bot.*, vi. p. 418) he referred O. Aschersoniana doubtfully to O. hæmatodes, Rchb. f., which is evidently incorrect, for Camus says the leaves of this hybrid are unspotted, while O. hæmatodes is described as having them very densely spotted with black. The leaves of the West Drayton plant are unspotted, as also are those of both the parents. Indeed we were unable to find any Orchis with spotted leaves, which suggests the absence of O. maculata, and naturally, of its hybrids, from the locality. The West Drayton hybrid differs from Schultz's figure in having narrower, unspotted leaves, and lighter coloured flowers, which are almost precisely intermediate between those of the two parents.

The West Drayton hybrid is probably identical with the one recorded from Hambledon, S.Hants., by Mr. Druce, as O. incarnata × prætermissa, (*Rep. Bot. Exch. Club*, 1915, p. 212), for a specimen of the West Drayton O. latifolia was sent by Mr. Dymes to Mr. Druce and was identified by the latter as O. prætermissa, which has now been recorded from many localities. And we believe that the same hybrid occurs in the Hern Meadows, Hampshire, where Townsend remarks (*Fl. Hampsh.*, p. 505) that "the purple-flowered form grows intermingled with the flesh coloured form and there seems to be no difference between the two in the time of flowering," while O. latifolia, which also occurs there, blooms later. In the absence of specimens, it is difficult to identify this so called purple incarnata, and we had taken it for O. prætermissa (*O.R.*, xxiii. p. 207), this view being strengthened by the record that the pink incarnata and the later-blooming O. latifolia are found with it. The name O. prætermissa had not then appeared, and the possible source of confusion will be seen presently. This hybrid doubtless occurs elsewhere, and Scully in his *Flora of Kerry* remarks (p. 279) that when O. latifolia and O. incarnata grow together, "as they sometimes do abundantly, intermediate forms have been gathered which could not be definitely referred to either species. Mr. Marshall, who noticed similar forms about Castlegregory, &c., has suggested a hybrid origin for the plants."

A similar remark to that made by Mr. Scully applies also to O. latifolia and O. maculata, for a most perplexing set of intermediates (known as O. Braunii), occurs where these grow intermixed, and now we have evidence of the occurrence of the third combination in Britain, namely O. incarnata

× maculata. The latter was recognised on the Continent over half-a-century ago, and described as follows :—

ORCHIS AMBIGUA, A. Kern, was described in 1865 (*Verh. Zool.-Bot. Gesell. Wien*, xv. p. 205, t. 2, fig. 1-3), the author remarking that he found three examples in 1852 in a wet meadow near Oberndorf, on Mt. Jauerling, Lower Austria, with O. maculata and O. incarnata. It has since been found in Germany, France, and Switzerland, and now a plant has been found in Hampshire, by Mr. D. G. Lowndes, in July 1917, and recorded as O. maculata × incarnata ? (*Rep. Winch. Coll. Nat. Hist. Soc.*, 1915-17, p. 13, with plate). Only the spike is shown in the photograph, but the flowers seem quite intermediate in shape.

ORCHIS BRAUNII (latifolia × maculata) has already been dealt with pretty fully (*O.R.*, xx. pp. 201-2 ; xxiii, pp. 367-8, fig. 45), but further materials have come to hand. For example, Mr. H. Essenhigh-Corke, Sevenoaks, has submitted to Kew specimens of the hybrid, together with both parents, and he remarks : " In a meadow near here there are hundreds of Orchises in bloom, and I have made an attempt to decide upon the two types, latifolia and maculata. Out of about sixty specimens examined at random it seems that three distinct varieties may be found in this meadow, and in about equal proportions, and pretty constant." Examples of each were sent, and their characters were carefully defined, with the final remark that he made the intermediate one to be a hybrid between the other two—a quite independent confirmation of the facts. It recalls a visit paid to Ventongimps Mill Moor, Cornwall, some years ago, when we found numerous intermediates, and some diverging in the direction of either parent. This hybrid is both common and widely diffused—for the localities in which the two parent species grow together are very numerous—and to this fact we attribute the confusion into which the history of O. latifolia has fallen.

ORCHIS LATIFOLIA, L. (*Sp. Pl.*, ed. 1, p. 941) was based on several earlier records, including O. palmata palustris latifolia longis calcaribus, *C. Bauh. Pinax*, p. 85, the only figure cited being *Vaill. Paris*, t. 31, fig. 1-5. These records again include O. palmata palustris latifolia, *Moris. Pl. Hist. Oxf.*, iii. p, 498, sect. 12, t. 15, fig. 3, and Palma Christi mas, *Gerarde Herb.* p. 220, fig. 1, both of which represent the Marsh Orchis with broad unspotted leaves, so that thereis not the slightest doubt about the plant intended. And Gerarde's figure dates from 1597, and is believed to be the earliest British record of the species. Modern figures include O. latifolia, *Sm. Engl. Bot.*, t. 2308, and O. incarnata, *Syme Engl. Bot.*, ix. p. 100, t. 1385 (not of Linn). Under this we include the West Drayton plant, and now O. prætermissa, Druce. The confusion we believe arises from hybridity, and from the fact that the name O. latifolia has often been applied to the plant with spotted leaves. Mr. Druce, for example, speaks of the leaves of O.

latifolia as "much spotted, the chocolate-coloured spots often circles with the centres of the normal colour." The latter we refer to O. Braunii, and the fact that such forms abound where O. latifolia grows intermixed with O. maculata is significant. A remark by Curtis is interesting in this connection. "Haller represents the leaves somewhat spotted. . . . We do not find them so in the neighbourhood of London, but probably they may be so in other places; and should that be the case, these two plants will approach still nearer to each other." The inference to-day might have been different.

ORCHIS INCARNATA, L. (*Fl. Suec.*, ed. 2, p. 313) has a most confused history, which we shall only attempt to extricate so far as Britain is concerned. It was definitely included as British by Leighton in 1841 (*Fl. Shropsh.*, p. 429), and Babington afterwards remarked, "First noticed by me in the year 1833, but not then destinguished from O. latifolia (*Fl. Camb.*, p. 225). And it can be traced back at least to 1690, for it is the O. latifolia ar. β, *Smith Fl. Brit.*, iii. p. 924, the O. palmata palustris tota rubra, *Ray Strip. Brit.*, ed. 3, p. 382, and the flesh coloured variety of O. palmata non maculata, *Ray*, *l.c.*, ed. 1, p. 172. It may even go back as British to 1597, for it is the Serapias minor nitente flore. *Gerarde Herb.*, pp. 171, 172, fig. 4, but no locality is given. Morison, in 1699, *Pl. Hist. Oxf.*, iii. p. 498, again gives no locality, but the habitat, "uliginosis, præsertim ubi nigrior terra est," is characteristic. And a figure appeared as long ago as 1821, for the O. latifolia, *Curt. Fl. Lond.*, ii. t. 30, is clearly a very fine O. incarnata, and the author remarked, "We need go no further than Battersea meadows to find this plant in tolerable abundance; at a greater distance from town it will be found much more plentifully; it flowers towards the latter end of May. With us pink is the most predominant colour of its blossoms, though they are frequently found purple, and sometimes white; even in the same meadow." The species is readily distinguished from O. latifolia by its narrow leaves, which are somewhat cucullate at the extreme apex, the rather smaller, usually pink flowers, with reflexed, not spreading, lateral sepals, and a narrower, less distinctly three-lobed lip, which is more reflexed at the sides, and by its commencing to flower about a fortnight earlier under the same conditions. The distinction between it and O. latifolia has been obscured by the presence of hybrid intermediates where the two grow intermixed.

ORCHIS MACULATA, L., is typically a plant of drier situations, but is sometimes found in marshes, and hybridises freely with O. latifolia, and more sparingly with O. incarnata, perhaps because the two less frequently grow intermixed. It is also more abundant and more generally diffused than the other two species, and possesses a range of variation commensurate with the diverse conditions under which it grows. This variation has recently led to an attempt to subdivide it into three species, a point already

dealt with (*O.R.*, xxiii. pp. 253-254). Apart from this, it is seldom mistaken, and its characters are too well known to need further definition.

Orchis maculata, latifolia and incarnata are the three British members of the very natural section Dactylorchis, and we believe them to be thoroughly distinct, though their natural limits have been obscured by the camouflage of hybridity where they grow intermixed. To this we attribute the confusion into which the group has fallen. All the three possible combinations have been recognised in Britain, O. maculata × latifolia = O. Braunii, O. maculata × incarnata = O. ambigua, and O. latfolia × incarnata, usually called O. Aschersoniana, though the point requires confirmation, as pointed out above. An alternative theory has been advanced, namely that they originally formed a single species, and as regards O. latifolia and O. maculata that those which established themselves in marshes developed in a different way to those which grew in dry ground; that the down forms have become fairly stable, while the marsh forms show every kind of intermediate. We are not concerned here with the causes that led to their separation, but it is significant that it is in the marshes that they have come together again, and afforded the opportunity for hybridisation, and it is here that the multitudinous intermediates occur that seem to defy all attempts to classify them satisfactorily. It is the way with most hybrid intermediates.

R. A. ROLFE.

STRUCTURE OF THE OPHRYDEÆ.—About twenty years ago we called attention to a "novel" view of the structure of the anther of the Ophrydeæ just expressed by the late Sir George King (*O.R.*, vi. pp. 264-266). We have just discovered that the same view was suggested over forty years earlier by the Rev. J. S. Henslow, when figuring an abnormal flower of Habenaria chlorantha (*Journ. Linn. Soc.*, ii. pp. 104-105, t. l, fig. B). He then remarked:—"I venture to put the following questions. May not the two anther-lobes (in this genus and others, as Orchis, Ophrys, &c., allied to it) usually regarded as belonging to one, viz., the anterior, stamen of the outer whorl, belong rather to two stamens (viz. one to each of the two lateral of the inner whorl, their other lobe in such cases being abortive? Such a structure would bring these genera into closer affinity with Cypripedium, where both lobes of the two lateral stamens of the inner whorl are fertile, whilst the anterior stamen of the outer whorl forms the prominent staminodium of that genus. If this should prove to be the case, the rostellum (where it occurs) would be the representative of the anterior stamen of the outer whorl, and not a process from the stigma, as it is usually regarded." Sir George King was evidently unacquainted with this paper, but the theory does not fit the facts, as we have already shown.

R.A.R.

STAUROPSIS IMTHURNII.

THE distinct and striking Stauropsis Imthurnii, Rolfe, is again blooming at Kew, the inflorescence being about four feet long, and bearing fifteen side branches. The species was described and figured some time ago in the *Botanical Magazine* (t. 8714), as follows:—"This fine Stauropsis is remarkable for its exceptional size and its ample lax panicle of white flowers with violet blue markings on the lip. A native of the Solomon Islands, Kew is indebted for the plant to Sir Everard im Thurn, who met with it in 1905 when visiting that Archipelago on H.M.S. Torch, as Governor of Fiji and High Commissioner of the Western Pacific. At Langa Langa, on the west coast of Mala (Malaita) Island, an opportunity was afforded of botanising in the bush. In a forest with many large canopy trees, but little undergrowth, the plant figured was found on a fallen trunk on which grew a dense mass of other Orchids with ferns and grasses; it bore the remains of a fairly recent flower-spike. On reaching Fiji it was planted on a topped tree fern under a 'bush house' in the gardens of Government House. It showed no sign of a new flower-spike until May, 1908. This spike was under a foot long in August, 1909, when it began to develop more rapidly, but still showed no tendency to branch. In March, 1910, Fiji was ravaged by a violent hurricane. The Stauropsis was rescued from the bush house by Mr. D. Yeoward, Curator of the Fiji Botanic Station, and brought intact to the ruins of Government House, where it was fastened for safety underneath a billiard table. After the storm it was reinstalled on its old tree-fern stem, and during the next seven months its spike branched to some extent, and produced two rather poor flowers. In November, 1910, it was brought from Fiji by Sir Everard, and after a journey across Canada was sent from Liverpool to Kew, where it has since thriven well in the Tropical Orchid House, coming once more into flower in September, 1916. During flowering the prolonged development of the spike described by Sir Everard as regards 1908-10 has been equally manifest, but during 1914-16 branching has been more extensive."

The species was also met with in August, 1910, by Mr. C. M. Woodford, British Resident at Tulagi, Solomon Islands, who shortly afterwards sent a sketch and an imperfect dried specimen to Kew. This plant was met with on the north side of Ysabel Island, when the flowering period appeared to be nearly over, but Mr. Woodford remarked that he had met with the species once before, on which occasion it was not in flower.

The genus now consists of over a dozen species, ranging from India and South China to New Guinea. Several of them are known in cultivation.—R.A.R.

ODONTOGLOSSUM FORMOSUM.

IMPROVEMENTS in Odontoglossums are being effected on various lines, one of them being in the improved shape of the flower, and especially of the lip, in both of which the influence of O. Pescatorei is to be traced. The round shape of the flower and the broadly pandurate lip of this species have always been admired, as approaching the florist's ideal, though the qualities of size and markings were wanting. The first step towards improvement was taken when O. Pescatorei was successfully united with O. crispum and

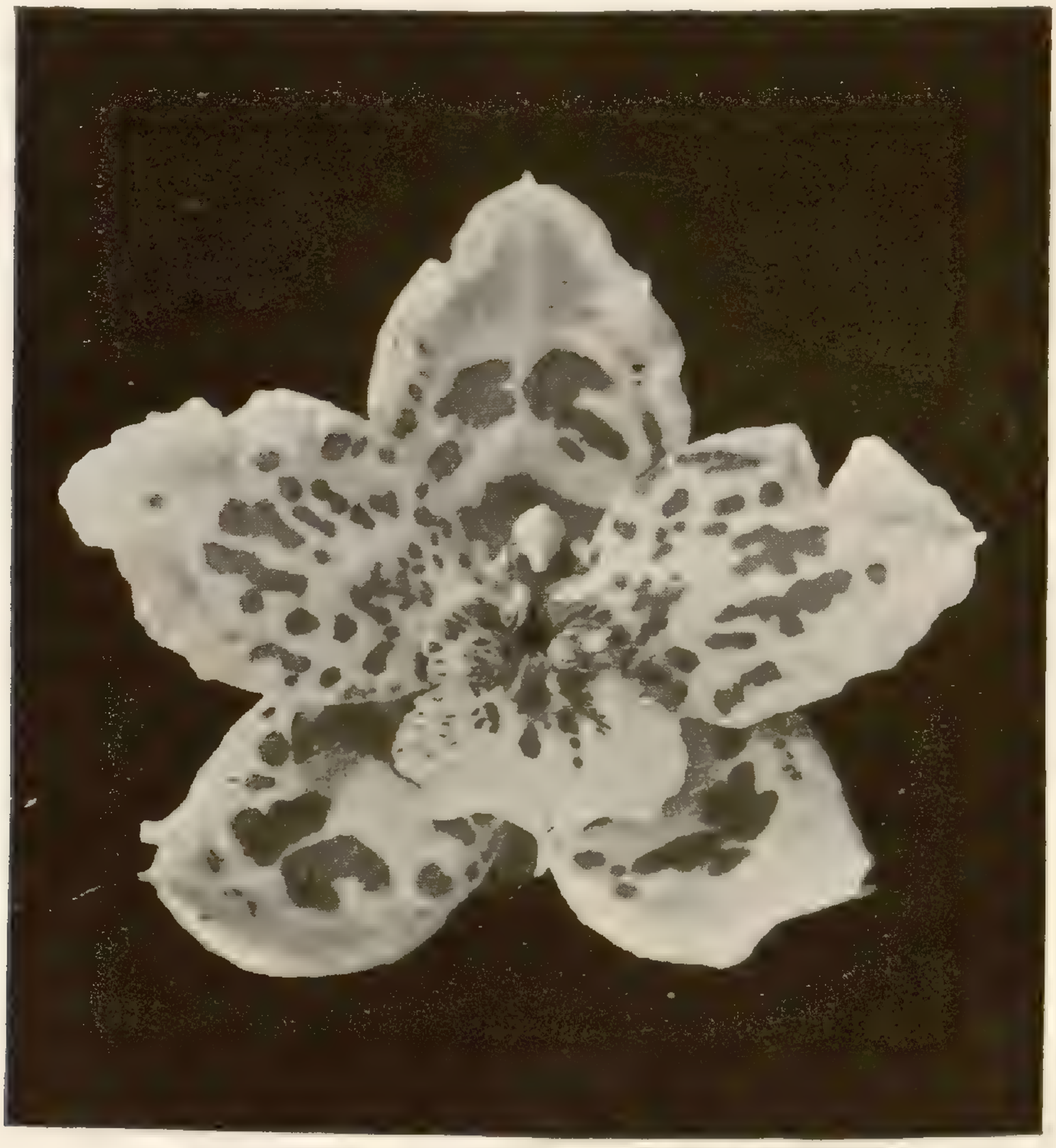

Fig. 19. ODONTOGLOSSUM FORMOSUM.

O. Harryanum, the first by M Jacob, resulting in O. armainvillierense, and the second by M. Ch. Vuylsteke, resulting in O. Rolfeæ, which will always rank as two of the most beautiful of primary hybrids. A next step was effected when M. Vuylsteke recrossed O. Rolfeæ with O. Pescatorei, resulting in O. formosum, which was exhibited by him at the Temple Show in 1905, and of which one of the flowers is here represented from a photograph. At the succeeding Temple Show M. Vuylsteke showed a still more beautiful variety, O. formosum var. Diana, which gained an Award of

Merit, and of which a figure was also given (*O.R.*, xiv. pp. 240, 241, fig. 29). In both of them the increased influence of O. Pescatorei is apparent.

ODONTOGLOSSUM JASPER (fig. 20) shows an improvement on another line, this being a ternary hybrid from O. crispum and O. Harryanum. These two species were originally crossed by M. Ch. Vuylsteke, resulting in

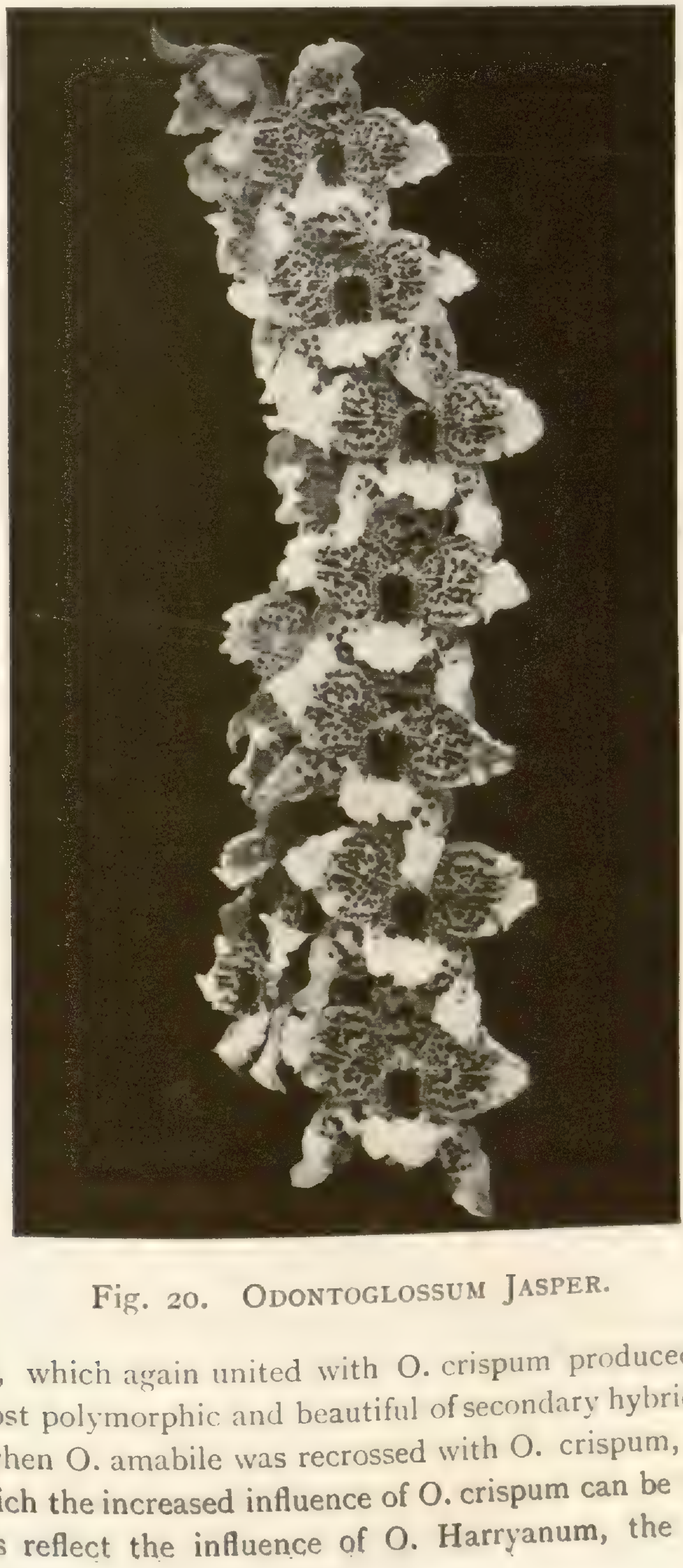

Fig. 20. ODONTOGLOSSUM JASPER.

O. spectabile, which again united with O. crispum produced O. amabile, one of the most polymorphic and beautiful of secondary hybrids. The third stage came when O. amabile was recrossed with O. crispum, producing O. Jasper, in which the increased influence of O. crispum can be traced, though the markings reflect the influence of O. Harryanum, the large blotches

having been broken up into small spots during the successive crossings with O. crispum. It is a very beautiful hybrid, and the spike here figured is a fine one, with fourteen flowers, and was grown in the collection of the late John S. Moss, Esq., the plant, originally raised by Messrs. Charlesworth, having been purchased at the Tankerville sale. The flowers are heavily spotted with red-purple on a rosy ground.

SOCIETIES.

ROYAL HORTICULTURAL.

A MEETING of the Royal Horticultural Society was held at the London Scottish Drill Hall, Buckingham Gate, Westminister, on June 18th—the only one during the month—and brought together a good display of choice Orchids, the awards consisting of two First-class Certificates, three Awards of Merit, one Preliminary Commendation, and three medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, C. J. Lucas, F. J. Hanbury, W. H. White, S. W. Flory, J. Charlesworth, C. H. Curtis, E. R. Ashton, A. McBean, F. K. Sander, Pantia Ralli, Sir Harry J. Veitch, J. Wilson Potter, S. H. Low, R. A. Rolfe, and R. Brooman White.

FIRST-CLASS CERTIFICATES.

MILTONIA LADY-VEITCH (vexillaria memoria G. D. Owen × Jules Hye de Crom).—A very beautiful hybrid, bearing an inflorescence of four large and perfectly-shaped flowers, the colour being blush white, with a rosy stain at the base of the petals, and a large, dark maroon mask at the base of the lip, shading off to ruby-crimson in front, where the margin is broken up into a series of short broad rays. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM PROMERENS XANTHOTES (eximium xanthotes × crispum xanthotes).—A most beautiful form, the plant bearing an inflorescence of sixteen flowers of perfect shape and good substance, the ground colour being pure white, with a cluster of chrome-yellow spots on the sepals, and a similar blotch on the lip in front of the yellow crest. Exhibited by Messrs. Armstrong & Brown.

AWARDS OF MERIT.

DISA ITALIA (Blackii × grandiflora).—A brilliant hybrid, having large and well-shaped flowers, the sepals bright rose purple, somewhat paler towards the base, and the petals cream white, with dark markings. Exhibited by Messrs. Flory & Black.

ODONTIODA TREBIZOND (Odm. Fascinator × Oda. Charlesworthii).—A handsome hybrid, bearing a spike of nine flowers of good shape and very

dark colour. The sepals and petals are dark reddish-claret with a narrow whitish margin, and the lip is dark red, with a white area in front and a deep yellow crest. Exhibited by G. W. Bird, Esq., Manor House, West Wickham (gr. Mr. Redden).

ODONTOGLOSSUM CRISPUM THE BRITISHER.—A fine home-raised seedling, bearing large blush white flowers, about $3\frac{3}{4}$ inches across and of fine substance, the lip having a few dark red markings round the yellow crest. Exhibited by Mrs. F. M. Ogilvie, The Shrubbery, Oxford (gr. Mr. W. Balmforth).

PRELIMINARY COMMENDATION.

ODONTOGLOSSUM ARMSTRONGII (crispum × Armstrongiæ).—A brilliant seedling, the flower being very large, and having broad, overlapping segments of good substance, and the colour white, with about two-thirds of the area covered with large violet-purple blotches. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent a plant of Nanodes Medusæ bearing four fine flowers.

A. R. Cunliffe, Esq., Woodford, Salisbury, sent a plant of Brassocattleya imperialis bearing two large flowers.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a particularly fine group, gaining a Silver-gilt Flora Medal. It contained numerous Odontoglossums, Odontiodas, and Læliocattleyas, some choice Miltonias, a series of albino Cypripediums, including callosum Sanderæ, Lawrenceanum Hyeanum, Maudiæ and Holdenii, a well-bloomed Maxillaria tenuifolia, good examples of Odontioda Clotho and Chantecler, with other good things.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a fine group, including examples of the handsome Miltonia Charlesworthii, Læliocattleya Martinetii, Cordelia, and others, Cattleya Stuartii virginalis, Anguloa Clowesii, Cœlogyne burfordiensis, the bright rose-purple Saccolabium ampullaceum, two well-bloomed Masdevallia muscosa, Lælia lobata alba, the yellow Odontoglossum luteopurpureum Vuylstekeanum, O. Williamsianum, good examples of O. eximium xanthotes, Wilsonara insignis, Odontioda Edna, Cypripedium Iris (Maudiæ × Chamberlainianum), with three flowers, and others.

Messrs. Stuart Low & Co., Jarvisbrook, also received a Silver Flora Medal for a fine group, including good examples of Cattleya Mossiæ and var. Wageneri, C. Rothschildiana, some well grown Disa Luna, Sophrocatlælia Marathon, Sophrolælia Orpetiana, the richly-coloured Læliocattleya Dominiana, Odontoglossum Lambeanium, Odontioda Vuylstekeæ, O. Evelyn, and others, in well-grown examples.

At the meeting held on July 2nd Orchids were less numerous, and the awards consisted of two medals and two Preliminary Commendations.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Arthur Dye, J. Wilson Potter, W. H. White, R. A. Rolfe, W. Bolton, J. Charlesworth, T. Armstrong, F. K. Sander, R. G. Thwaites, Sir Harry J. Veitch, F. J. Hanbury, and C. H. Curtis.

PRELIMINARY COMMENDATIONS.

ODONTOGLOSSUM JASPER ASHTEAD PARK VAR. (crispum × amabile).—A very distinct form, the flower most resembling the O. crispum parent, and having broad segments of good substance, the colour white with clusters of dark purple spots in the centre, and the crest of the lip bright yellow. Exhibited by Pantia Ralli, Esq., Ashtead Park (gr. Mr. W. H. White).

ODONTOGLOSSUM PROMERENS PRINCESS MARY (eximium × crispum).—A beautiful variety, the flower being of excellent shape, and the ground colour pure white, the spots having two broad bands of reddish mauve, and the nearly circular petals a large blotch of similar colour in the centre, and the broad lip some darker markings in front of the yellow crest. Exhibited by Messrs. Armstrong and Brown.

GENERAL EXHIBITS.

Messrs. Armstrong and Brown, Tunbridge Wells, were awarded a Silver Flora Medal for a beautiful group, including good examples of Lælia tenebrosa and purpurata, Anguloa Cliftonii, and the rare Cypripedium Druryi, with a fine series of hybrids. Noteworthy among these were a good Odontonia brugensis, Odontioda Lutetia, Cooksoniæ, and Madeline, Odontoglossum Cynthia (eximium × Mars) a fine white, well blotched variety, good examples of O. eximillus, and others, Cypripedium Maudiæ, Læliocattleya Martinetii, some well grown Miltonia vexillaria, Hyeana, and other good things.

Messrs. Charlesworth & Co., Haywards Heath, also received a Silver Flora Medal for a rich and varied group, including Odontioda Lyra (Odm. Jasper × Oda. Royal-Gem), a promising ruby-violet seedling, with lilac apex to the lip, O. Lorna (Oda. Lambeauana × Odm. Olympia), a richly coloured hybrid with some white splashes on the segments, O. Juliet (Oda. Bradshawiæ × Odm. promerens), Odontoglossum Penelope albens (Rolfeæ × Olympia), with large white segments and some of the unmistakable Rolfeæ marking on the lip, the yellow O. luteopurpureum Vuylstekeanum, good examples of O. crispum xanthotes and O. eximium xanthotes, two plants of the rose-purple Disa Blackii, the rare Cirrhopetalum pulchrum var. Cliftonii, Cattleya Stuartii virginalis and C. Warscewiczii majestica, Phalænopsis Lueddemanniana with three racemes, some finely-grown plants of Miltonia Charlesworthii, Brassocatlælia Ajax (Lc. Aphrodite × Bc. Veitchii), Læliocattleyas, and others.

At the meeting held on July 16th three particularly fine medal groups were staged, with a few other exhibits, one of which secured an Award of Merit and another a Preliminary Commendation.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, J. Wilson Potter, Walter Cobb, W. H. White, Arthur Dye, R. Brooman White, W. Bolton, R. A. Rolfe, W. H. Hatcher, J. Charlesworth, J. F. Shill, C. H. Curtis, T. Armstrong, F. K. Sander, Pantia Ralli, F. J. Hanbury and C. J. Lucas.

AWARD OF MERIT.

ODONTOGLOSSUM QUEEN ALEXANDRA VAR. DE BARRI (Harryanum × triumphans Lionel Crawshay).—A brilliant variety, bearing an inflorescence of twelve large and finely-shaped flowers, the sepals and petals heavily blotched with chestnut brown on a yellow ground, and the nearly circular lip white in front and with a broad ruby-crimson blotch in front of the yellow crest. Exhibited by De Barri Crawshay, Esq., Rosefield, Sevenoaks.

PRELIMINARY COMMENDATION.

ODONTIODA CHERIBON (Oda. Vuylstekeæ × Odm. Mars).—A very promising hybrid, the flower being large and of good shape and substance, the sepals and petals almost cherry red, with a few whitish splashes, and the broad lip blotched with dark red, with some rosy freckles on the white apex. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent Odontoglossum Prince John, with well-blotched flowers, and two finely-grown examples of Dendrochilum filiforme, bearing numerous graceful racemes of yellow flowers.

Walter Cobb, Esq., Normanhurst, Rusper (gr. Mr. Salter), sent a very fine flower of Anguloa Cliftonii and an inflorescence of a good form of the brilliant Cochlioda Nœtzliana.

William Bolton, Esq., Wilderspool, Warrington, sent a flower of Anguloa brevilabris.

Mr. J. E. Shill, The Dell Gardens, Englefield Green, sent a cut spike of a good form of Cattleya Dupreana (Warneri × Warscewiczii).

Messrs. Stuart Low & Co., Jarvisbrook, staged a particularly brilliant group, to which a Silver-gilt Flora Medal was awarded. It included a plant of the rare Cattleya Rex and some well-bloomed C. Warscewiczii, C. Mossiæ Wageneri, Dendrobium Victoria-Regina, thyriflorum, densiflorum and pulchellum, good examples of Renanthera Imschootiana, the rare Aërides crassifolium, Bulbophyllum barbigerum, Oncidium macranthum, Lælia tenebrosa, and numerous brilliant Læliocattleyas, Odontiodas and Odontoglossums, the plants being well grown and very effectively staged.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Flora

Medal for a fine group, including many beautiful Odontiodas, Odontoglossums, and Læliocattleyas, with Cattleya Saturn and some good forms of Cattleya Warscewiczii, Cypripedium Maudiæ, Cirrhopetalum pulchrum, and others, among which we noted Læliocattleya Kavala (C. Elvina × Lc. Epicasta), with large rose-coloured flowers and a purple lip, Odontoglossum Farnesii (Rolfeæ × Crawshayanum), O. excellens, and some handsomely blotched hybrids.

Messrs. Charlesworth & Co., Haywards Heath, also received a Silver Flora Medal for a fine group, including excellent examples of Cattleya Hesta and C. Jaskelliana, C. Warscewiczii majestica, Miltonia Isabel Sander with spikes of six and four flowers, and several fine M. Charlesworthii and M. vexillaria, Odontoglossum eximium, Othello, Doris, crispum, and others, several brilliant Odontiodas, Brassocattleya Virgo (B. cucullata × C. Mossiæ), three finely-grown plants of Thunia Veitchiana, and other good things.

Messrs. Flory & Black, Slough, showed Sophrocatlælia Vesuvius (Lc. Nella × Scl. Marathon), a promising novelty, having light salmon rose sepals and petals, the former somewhat paler, and a rich ruby red lip.

At the meeting held on July 30th there was a moderate display of Orchids, and the awards consisted of one First-class Certificate, one Preliminary Commendation, and two medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), W. Bolton, R. A. Rolfe, J. Wilson Potter, Sir Harry J. Veitch, Pantia Ralli, C. H. Curtis, J. Charlesworth, E. R. Ashton, Walter Cobb, C. J. Lucas, R. Brooman White, F. J. Hanbury, and S. W. Flory.

FIRST-CLASS CERTIFICATE.

LÆLIOCATTLEYA BRITANNIA MAJESTICA (Lc. Canhamiana alba × C. Warscewiczii Frau Melanie Beyrodt).—A superb variety, bearing a spike of four large and finely-shaped flowers, with pure white sepals and petals, and the very broad lip Tyrian purple in front, with a yellow disc and a broad white margin. Exhibited by Messrs. Charlesworth & Co.

PRELIMINARY COMMENDATION.

ODONTOGLOSSUM MARNE (armarivillierense Orchidhurst var. × Colossus).—A brilliant seedling, bearing a large, round flower, with broad segments, the inner two-thirds violet-purple and the rest white, while the lip is well-blotched with violet purple and of the typical Pescatorei shape.

GENERAL EXHIBITS.

Dr. Miguel Lacroze, Bryndir, Roehamptan (gr. Miss Robertson), sent Cattleya Hesta Bryndir var., a fine white, with the front of the lip purple and the disc yellow, and Odontoglossum Cordoba (Doris × eximium), a fine white, with a zone of purple spots on the segments.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a fine group, the centre of which consisted of seven plants of the beautiful Cattleya Hesta, white with a purple front lobe to the lip, C. Princess Royal, C. Kitty Wren, and C. Mignelito, a well-bloomed Dendrobium regium, Odontonia Magali Sander xanthotes, Miltonia Venus, fine specimens of M. Charlesworthii and M. Isabel Sander, Oncidioda bella, Stanhopea inodora, a striking Orchid that is not often exhibited, a pretty Odontioda from O. Cooksoniæ and Odontoglossum illustrissimum, light-yellow with the lower two-thirds of the segments chestnut-red, and the crest of the lip orange, a very fine Odontoglossum amabile splendens, forms of O. Felicity (Olympia × armainvillierense), and others.

Messrs. Stuart Low & Co., Jarvisbrook, were also awarded a Silver Flora Medal for a fine group, the back of which consisted of thirteen well-bloomed plants of Cattleya Warscewiczii, one spike bearing seven flowers and four others six each, the rare Vanda Denisoniana, Angræcum Scottianum, Lælia tenebrosa, Oncidium candidum, Epidendrum verrucosum with two fine spikes, Epicattleya Nebo, rose with lilac-coloured lip, Brassocattleya Andre Maron, Odontioda Enterpe and Thwaitesii, Odontoglossum Hyeanum, O. Uroskinneri album, Læliocattleya Dominyana, and others.

Messrs. J. & A. McBean, Cooksbridge, sent a small group, including a beautiful example of Dendrobium Dearei with a spike of fourteen flowers, C. Dowiana, C. Warscewiczii, C. Rothschildiana albescens, Odontoglossum crispum, and two plants of Miltonia vexillaria Queen Alexandra, a fine white form.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on June 6th, when the members of Committee present were: Rev. J. Crombleholme (in the chair), Dr. Craven Moore, Messrs. D. A. Cowan, J. Cypher, J. Evans, A. R. Handley, J. Howes, A. Keeling, D. McLeod, J. McNab, W. Pickup, E. Rogers, W. Schackleton, H. Thorp, H. A. Barnard, E. Cooper, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cymbidiella Humblotii, from Mrs. Bruce and Miss Wrigley.
Odontoglossum Amethyst magnificum, from Dr. Craven Moore.
Odontoglossum crispum Altair var. Empress, from Mr. J. Evans.

AWARDS OF MERIT.

Læliocattleya Eudora var. Regina, from S. Gratrix, Esq.
Læliocattleya Isabel-Sander, from Messrs. Sanders.
Odontoglossum crispum Highfield var., from Mr. W. Shackleton.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum King Albert, from S. Gratrix, Esq.

CULTURAL CERTIFICATES.

To Mr. C. Branch, for Cattleya Warneri Ardenholme var.
To Mr. E. Marshall, for Cypripedium St. Swithin.
To Mr. E. Rogers, for Cymbidiella Humblotii.
To Messrs. Keeling & Son, for Maxillaria Sanderiana superba.

Silver Medals were given to fine groups from Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. E. Rogers); W. R. Lee, Esq., Heywood (gr. Mr. C. Branch); Messrs. Cypher & Sons, Cheltenham; and Messrs. Sanders, St. Albans, the latter group including the rare and very interesting Listrostachys forcipata and Epidendrum organense, while a special feature of the first-mentioned group was a magnificent specimen of Cymbidiella Humblotii, to which both a First-Class Certificate and a Cultural Certificate were awarded.

Interesting exhibits were staged by S. Gratrix, Esq., and Mrs. Gratrix, Whalley Range (gr. Mr. J. Howes); the Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. E. Marshall); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); Mr. J. Evans, Lymm; Mr. W. Shackleton, Bradford; and Messrs. Keeling & Sons, Bradford; all of whom are represented in the above List of Awards.

At the meeting held on Thursday, June 20th, the members of Committee present were: The Rev. J. Crombleholme (in the chair), Dr. Craven Moore, Messrs. J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, E. Rogers, W. Shackleton, H. Thorp, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum Dora var. La Rose, from J. J. Bolton, Esq.
Cattleya Mossiæ var. King Emperor, from W. R. Lee, Esq.

AWARDS OF MERIT.

Odontioda St. Quentin, from S. Gratrix, Esq.
Odontoglossum Mrs. Wm. Thom, from Wm. Thom, Esq.

CULTURAL CERTIFICATES.

To Mr. J. Law, for Oncidium crispum grandiflorum.
To Mr. E. Rogers, for Phalænopsis amabilis Rimestadiana.

Silver Medals were awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. E. Rogers), for a fine group of Odontoglossums and Phalænopsis amabilis Rimestadiana, the latter gaining also a Cultural Certificate; and to Messrs. Cypher & Sons, Cheltenham, for a fine general group, both species and hybrids being well represented.

Interesting exhibits were staged by J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law); S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); W. R. Lee, Esq., Heywood (gr. Mr. C. Branch); and W. Thom, Esq., Blackburn (gr. Mr. R. Williams), and are included in the above List of Awards.

ORCHIS MACULATA SUPERBA.

WE have already indicated the identity of the Orchis maculata superba of gardens with the natural hybrid O. Braunii, and we may now summarise its very interesting history, in connection with the article on British Marsh Orchises (pp. 162-166).

On July 19th, 1866, it is recorded that a First-class Certificate was awarded to a robust-growing and finely-flowered variety of Orchis maculata called superba, found in Ayrshire, exhibited by Messrs. Osborn, and to a similar plant shown by Mr. Williams (*Gard. Chron.*, 1866, p. 590). Messrs. Osborne's plant was figured at t. 308 of the *Floral Magazine*, when the exhibitors remarked: "It was found growing wild in Ayrshire, but where and by whom we do not know, it having passed into our hands through the respected firm, the Messrs. Sampson, of Kilmarnock."

Shortly afterwards the history was given by Messrs. Dreghorn & Aitken, Kilmarnock (*G.C.*, 1866, p. 659). as follows: "This fine Orchis was found many years ago within a few miles of Kilmarnock, and was grown for a long time in the gardens of the cottagers of the village, where it was found, unheeded and uncared for. It is only during the last two or three years that its excellence as a hardy border plant have been recognised. It has been examined by most of the botanists in this locality, who don't all agree as to its being a mere variety of maculata, some inclining to believe it a distinct species; but from the close resemblance which it bears to maculata we named it some years ago superba, to distinguish it from the common one of that name (maculata)." This appeared under the heading, "Orchis latifolia (maculata superba)," the change of name being explained in an editorial note: "Mr. Boswell Syme reports that this plant seems to be the true latifolia, the plant commonly so called and figured under this name in 'English Botany' being O. incarnata. It is a noble hardy perennial, remarkable for its deep colour, and dense spike.—Eds." The remark as to O. latifolia and O. incarnata is erroneous, and the same unfortunate transposition of names appears in the same author's *English Botany* (tt. 1457, 1458).

Some years later Mr. C. Wolley Dod recorded finding a very similar form near Eton (*Garden*, 1878, ii. p. 7), and he enquired: "Will any of your readers tell me whether O. latifolia is really specifically distinct from O. maculata? In the locality mentioned, near Eton, they grow side by side; where the ground lies higher the form is maculata, but where a swampy hollow intervenes latifolia (or incarnata) is the prevailing type. The extremes are distinct enough, but I find amongst them intermediate

connecting forms in which no distinct line of difference can be drawn—the lighter the colour of the flowers, the slenderer the stalk, and the greater the tendency to spotted leaves; but this rule is not without exceptions. By O. latifolia I understand the commoner form of the Marsh Orchis, without spots on the leaves, and with rosy purple flowers.

Mr. D. Moore, Glasnevin, replied (p. 25) that most British botanists regarded O. latifolia and O. maculata as truly distinct species, which was his own opinion, adding: "It must, however, be conceded by those who have seen these plants growing extensively under very varied circumstances that forms do occur, especially on the side of O. latifolia, which are very intermediate. The longer spur, more deeply three-lobed lip, with the three sepals of the flowers spreading, and the solid stem are pretty constant marks for distinguishing O. maculata from O. latifolia, though I have seen forms (he was speaking of Irish localities) where all these marks did not hold good."

Another correspondent enquired (p. 200) about a variety of O. latifolia called the Kilmarnock Orchis, and Miss F. Hope, Wardie Lodge, Edinburgh, replied (p. 214), giving details of size and methods of culture, but she enquired, "Why is this Orchis called maculata superba? for so it is known in the nurseries here, and some affirm that it is a distinct species. My impression has always been that it was a selected plant picked up wild. Oddly enough, I asked no questions when, sixteen years ago, I carried off then and there our original clump (some six or seven bulbs) from the little fourth-rate nursery garden at Kilmarnock. We grow no other O. maculata, and from that original clump hundreds have been raised." This note carries the history of the plant back to 1862.

Finally, to complete the record from the four kingdoms, we find a Welsh locality, for Webster, who grew the Kilmarnock Orchis, remarked (*Brit. Orch.*, p. 58): "On several occasions I have found plants in the bogs of Carnarvonshire, that I consider equally as good as the variety just referred to; indeed, on growing the two plants side by side, I, as well as many others, found it impossible to detect a difference." And he adds: "That it is a sport or hybrid between the two plants, is admitted by all —on the one hand, closely resembling O. maculata in colour of flowers and markings of the leaf, and O. latifolia in habit, general appearance and situations in which it is found growing."

We also find a much earlier record of the Sevenoaks locality (see p. 164), for it is the same plant that Mr. Day figured in June, 1884, as O. latifolia (*Orch. Draw.*, xliii. t. 17), a splendid specimen having been received from Mrs. C. K. Knight, of Sevenoaks. Mrs. Knight wrote: "I have had considerable opportunity to study O. latifolia and O. maculata in different districts, and though it is not difficult to distinguish between the two typical

plants, there are many intermediate forms that it is almost impossible to say to which of the above kinds they belong. This, in my opinion, is one of the intermediate forms."

What is evidently the same thing was described by D. Moore, in the *Irish Farmers' Gazette*, under the name of O. latifolia var. Bartoni, as a quite novel and very remarkable form, recently discovered by the Hon. Mrs. Barton, Straffan House, Kildare, in a meadow near Glenade, Co. Leitrim, at the base of the Benbullen range of mountains. The finder forwarded to Dr. Moore the only specimen removed, and he regards it as being the most beautiful of all our Irish Orchids. The plant was 14 in. high, and had a close raceme of flowers 5 in. long. The leaves are short and stout, fully 3 in. wide, and beautifully spotted with purple. Only two plants were met with by the finder when botanising in that rich district.—*Garden*, 1876, ii. p. 75.

The preceding records belong to Orchis Braunii (see p. 164) and form an important addition to its history. As to its decorative value, Miss Wardie's remarks may be summarised: In 1877, the average length of spike in a bed of seventy-two was seven inches, some with over nine inches of inflorescence. A bed of this is faultless; no staking is required. From the first peeping through the ground the extra dark markings of the leaves of the Kilmarnock Orchis make the bed an attractive one for weeks before the flowers make their appearance.

R.A.R.

ORCHIDS OF PANAMA.

COMPARATIVELY little is yet known about the Orchids of Panama, and we were therefore the more pleased to receive a few flowers and photographs from Mr. C. W. Powell, of Balboa, Canal Zone, and to find that he is paying attention to them. Mr. Powell has been on the Isthmus for twelve years, and in February, 1916, he moved to Balboa, where he has established a garden, not as a commercial proposition, but because of his personal love of flowers, and as an exposition of the Orchidaceæ of Panama.

He remarks: "My Orchid sheds cover some 2,500 square feet—we do not need glass houses with steam heat here. They are built on the arbour style, and are covered with a thin cotton drill to protect the plants from the burning sun. Panama is a great country, and possesses a great many varieties that I have been unable to identify. There is no Botanical Garden here, and no one has made a serious attempt to classify the Orchids. I am sure that Panama will prove to be quite as prolific as Costa Rica, and perhaps more so. Looking at the map, one may notice that Panama runs in a generally north-west and south-east direction. The winds are all from the north and south, and I am of the opinion that the

seeds of Costa Rican and Columbian Orchids have during the centuries been blown into Panama, and have grown and increased, producing many new varieties. Since I wrote you in April, a friend of mine made a trip to Chiriqui Province (which, by the way, is in Panama, as is the Chiriqui Volcano—rising to 13,000 feet—not in Costa Rica, as the Orchid books have it), and he sent me a box from there, in which I found twenty varieties that I did not have before, so that I now have 175 distinct varieties."

An account of the collection appeared in the *Panama Star & Herald* last February. It was written by a Captain of the United States Army who visited it, and a few extracts will give an idea of the character of the collection :—

"At his home Mr. C. W. Powell, of the Balboa Dispensary, has one of the wonder sights of the Isthmus. Here is a patch of rocky hillside transformed into a wonderful tropical garden, the equal of which it is hard to find. With infinite pains and loving attention, Mr. Powell, during the past two years, has accumulated a most complete collection of the Orchids of Central America. They have been collected during two vacation periods, and at other times, when Mr. Powell has searched the jungle for rare species, and the plants, after suitable treatment, are transferred to the Orchid garden. In the arrangement of his collection, Mr. Powell has shown the hands of a master artist. The whole garden is surrounded by a beautiful vine-covered fence. The central pavilion is covered with canvas. A rustic gate gives entrance to this miniature paradise. The gate posts are formed of dead jungle trees covered with Orchids. The walks, bordered with beautiful ferns and lilies, lead between Orchid-covered dead trees that are a riot of colour."

Mr. Powell sends photographs of a Sobralia, and of a Warscewiczella which may be W. Wendlandii, but the corresponding dried specimens are not yet to hand. He also sends dried flowers of the Oncidium that was lost in the post (see page 103), and this proves to be O. carthaginense, Swartz, so that we now have evidence that both O. luridum and O. carthaginense occur in Panama. They are very similar in habit, but the latter has smaller, very undulate segments, copiously dotted with rose on a light ground. Mr. Powell remarks : "I now have an old plant in bloom, with about 200 flowers, a most beautiful sight. They like hot, damp, semi-shady localities to grow in. The fleshy leaves measure from 16 to $22\frac{1}{2}$ inches long, and grow erect at first, but as they mature they curve over from their weight, until they rest on the basket or tree limb. The plants were found by me along the seashore, in damp, shady places, low down on the sides of trees, where the reflection of the sun on the water could just light up the surroundings through the bushes. From the denseness of the jungle it was impossible for any direct ray of sun to reach them."

It seems probable that Mr. Powell will be able to increase our knowledge of the Orchids of Panama, of which, according to an enumeration of Central American Orchids in the *Biologia Centrali-Americana*, some 104 species are known. These were largely extracted from Reichenbach's account of the Orchids collected by Warscewicz, chiefly in the Chiriqui district, some of which are still unrecorded from elsewhere, and may be endemic. According to this enumeration, seven species of Sobralia occur in Panama. And four species of Cynoches have been described from there, C. aureum, Lindl., C. Dianæ, Rchb. f., C. ventricosum, Batem., and C. Warscewiczii, Rchb. f. C. aureum is a very handsome yellow-flowered species of which nothing seems to be known but the original specimens, which are preserved in Lindley's herbarium, and it is suspected that C. Warscewiczii may be the female of the same. We hope that Mr. Powell may be able to obtain additional materials of so striking a plant. Epidendrum Pseudepidendrum, Rchb. f., is another striking Chiriqui species, with green sepals and petals, and bright red lip. Selenipedium Chica, Rchb. f., one of the three species of a small genus with Sobralia-like habit, is also a native of Panama, and, according to Reichenbach, possesses fruits that are highly aromatic, and are used by the inhabitants of the isthmus in the same way as Vanilla, hence the native name of Vainilla chica, or little Vanilla. There is evidently much of interest in the Orchids of Panama.

LYCASTES IN COSTA RICA.

LYCASTE brevispatha seems to be our common deciduous species, growing and flourishing under conditions which would soon prove fatal to L. leucantha, a shade and moisture-loving species occuring chiefly in ravines on the Atlantic slope at 2000 to 4000 feet; often terrestrial, or rather it is one of those species which if torn from their natural position by wind thrive happily on the ground. L. brevispatha, of which L. candida is probably a geographical form, is a very variable species, and those growing under the shadiest conditions seem to have the most heavily-marked flowers. The generality here have quite pale flowers, and are often grown on tile roofs, or on the tops of old walls, and are remarkably floriferous under such conditions. This species occurs wild a short distance north of Cartago, but is getting scarce there. South of San José, Candelaria hills, it is still abundant. Of L. leucantha I found a plant last week with leaves 26¼ inches long by 7½ inches wide and bulbs to correspond. L. brevispatha never attains such dimensions, 12 to 16 inches being the average length of leaves, and it has sharply bimucronate bulbs, those of L. leucantha being unarmed.

C. H. LANKESTER.

Las Concavas, Cartago, Costa Rica.

The above very interesting note was elicited by an article and figure of L. brevispatha at p. 112. The plants mentioned have been the subject of much confusion. L. candida, Lindl. (*Paxt. Fl. Gard.*, ii. pp. 37, 38, fig. 151, 152) may be regarded as a form of L. brevispatha, Lindl., for Lindley, when figuring under the name of L. leucantha, Klotzsch, a Central American species that had been introduced by M. Warscewicz, remarked: "The first that blossomed, being quite white, received the provisional name of L. candida, now superseded by that of leucantha, published, in December last, in the *Allgemeine Zeitung*, p. 402. But Klotzsch considered Lycaste as merely a section of Maxillaria, and the plant is not Maxillaria leucantha, Klotzsch (correctly understood above), but a form of M. brevispatha, Klotzsch, otherwise Lycaste brevispatha, Lindl. (*Paxt. Fl. Gard.*, iii. p. 44). Lindley was wrong in identifying the plant with that of Klotzsch, as is shown by the specimen in his Herbarium, where also is a water-colour sketch showing a few red spots on the segments. Reichenbach adopted the specific name, candida, but brevispatha was published first, and is also not misleading. It may be interesting to add that three other Costa Rican Lycastes have been recorded, L. Dowiana, Endr. & Rchb. f., L. macrophylla, Lindl., and L. xytriophora, Linden & Rchb. f., though the two latter require confirmation. L. xytriophora is recorded by Hemsley as from "Costa Rica (Carmiol)," which we are unable to verify. It is not mentioned in *Saund. Refug. Bot.*, ii. t. 131, the only reference cited by him, but we find there the note that "L. macrophylla, Lindl., is a plant with an immense geographical range, from Costa Rica to New Grenada and Bolivia and Peru." R.A.R.

ORCHID NOTES AND NEWS.

MEETINGS of the Royal Horticultural Society, at the London Scottish Drill Hall, Buckingham Gate, Westminister, are fixed for July 2nd, 16th, and 30th, and for August 13th, and 27th. The Orchid Committee meets at 11.45 a.m. The following meeting will be held on September 10th.

The meetings of the Manchester & North of England Orchid Society will be resumed, after the summer vacation, on September 5th. The Committee meets at noon, and the exhibits are open to the inspection of members and the public from 1 to 4 p.m. The following meeting is fixed for September 19th.

It is with deep regret that we learn of the death, on June 11th, of Mr. R. Hooper Pearson, for many years Managing Editor of the *Gardeners*

Chronicle. Mr. Pearson, who was in his 52nd year, has been in failing health for some time, his complaint being anaemia, and his early death will be mourned by a wide circle of horticultural friends. Twenty-five years ago, after a varied horticultural experience, Mr. Pearson joined the staff of the *Chronicle*, as Sub-Editor, under the late Dr. M. T. Masters, and during that period, in addition to his professional duties, he has taken an active part in many horticultural movements, an account of which is given in a sympathetic Obituary notice in the *Chronicle* for June 15th, accompanied by an excellent portrait. He leaves a widow and one daughter to mourn his loss. The funeral took place at Putney Vale Cemetery on June 15th, a large circle of friends and representative horticulturists being present.

Mr. C. Tinley, who has long been associated with the *Gardeners' Chronicle*, has been appointed Managing Editor in place of the late Mr. R. Hooper Pearson.

In some notes on the habitats of Orchids, Col. M. J. Godfery, F.L.S., remarks (*Journ. Bot.*, 1918, p. 49) that several essentially marsh Orchids are also found growing on chalk downs, for example, Orchis latifolia and O. prætermissa on the downs near Winchester, where they are smaller and less robust than the types. On the other hand, Gymnadenia conopsea, usually a plant of chalk downs and grassy hills, is sometimes found growing in marshes, the most extraordinarily robust which he has ever seen occurring in marshy meadows near Winchester, in company with Orchis prætermissa, O. incarnata, and O. latifolia, being nearly two feet high, the leaves broad and firm, and the flowers quite double the size of those of the ordinary plant, but without any signs of hybridity.

In an earlier issue (p. 1) new forms of Helleborine viridiflora are described by Messrs. T. and T. A. Stephenson, as forma vectenis and forma dunensis, the former found in shady spots on chalk, at Ventnor, Isle of Wight, and the latter on sand dunes near Southport, Lancashire. The significance of the variations is not clear, and H. viridiflora is usually considered to be a sub-species of the common H. latifolia, though the authors now propose to consider it as distinct. A figure of the forma vectensis is given.

A note on the Orchids of Jamaica, by J. C. Willis, appears in the *Annals of Botany* (1917, pp. 336-337). It is an analysis of their distribution, and out of a total of 194 species it is shown that 75 are endemic, 15 common to Jamaica and Cuba, while 104 reach the continent of America. The object of the analysis seems to be to prove a hypothesis advanced in other papers, that "Natural Selection has but little to do with the geographical distribution of species or the areas they occupy, and that the

area occupied at any given time in any given country depends mainly upon the age of a species in that country (not its absolute age)," and he proposes to "substitute age for natural selection as the chief agent in determining the area occupied by any given species, so long as no important barrier interferes." A serious limitation is, however, introduced, for he says that it must be clearly understood that, as in Mendelism, one must always deal with twenty or so species at once. Incidentally, we are confronted with another problem, for speaking of the pollinia of Asclepiads, he asks, "If these arose, as one must believe, directly at one operation, where does Natural Selection come in as formative or explanatory? But we do not see why one should believe such an obvious adsurdity.

THE ORCHID REVIEW.—Our readers will remember the notice that appeared at pp. 246-249 of our last volume. It elicited some interesting letters and valued support which we hope will secure the future of the *Review*, and if we have not previously replied publicly it is because the matter is not yet completed. Since that note was written a further advance of 20 per cent. has taken place in the cost of paper and printing, and now we are faced with a further increase of 50 per cent in the cost of postage. In addition to this, the pressure of additional work and shortage of labour caused by the war, has rendered it impossible to get the work out to time. One valued supporter strongly advocates bringing the work out bi-monthly, as a temporary measure, and although we have tried to avoid this, we agree that there are compensating advantages, and we hope that our readers will fall in with this arrangement, which, it will be noticed, commences with the present issue. The increased cost of postage for journals of this kind seems to us distinctly unfair, because it does not apply to newspapers, even when far heavier and publishing the same kind of matter. The rate of postage, formerly double, is now trebled, which becomes practically prohibitive.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

C.W.P.—Oncidium carthaginense, Swartz. The others not yet to hand.

S.T.—**Anguloa brevilabris, Rolfe.**

C.H.L.—n.35, Epidendrum Pfavii, Rolfe, *Kew Bull.*, 1894, p. 392; n.36, Epidendrum, species not yet matched; n.37, Oncidium, possibly new, as suggested. Can you send more complete materials of these? Many thanks for the notes.

F.D.—A Pleurothallis near P. ornata, Rchb. f., which we have not yet been able to match.

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The Orchid Review

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OUR NOTE BOOK.

THE notes on the Orchids of Panama given at pp. 179-181 afford an interesting glimpse as to the conditions of Orchid culture in the tropics. In these days of shortage of fuel, what would one not give to be able to do without glass and a complicated heating apparatus? Cultivators in this favoured locality seem to have little but the shading difficulty to contend against, which is easily managed by the erection of a simple framework covered with some kind of canvas, and perhaps some provision for keeping it in place during windy weather. Such conditions recall the so-called "bush houses" used in Java and other parts of the tropics, in which native and other Orchids are grown with much success. And an area 2,500 square feet provide accommodation for a considerable-sized collection as things go at home. Another advantage in the arrangement is that it enables the local plants to be grown under approximately native conditions, without any trouble as to their being placed at just the proper distance from the roof glass. There is, however, a corresponding drawback in the difficulty of providing a "cool house" for such species as occur at high elevation, of which there must be a good many in the Chiriqui district.

And speaking of the Chiriqui district reminds us how very little is still known of its Orchid flora. Some of the species collected there by Warscewicz over half-a-century ago are still only known by his original specimens, and when the remark includes such a remarkable and striking plant as Cycnoches aureum one can begin to understand a little of what it means. It is probable that a good many novelties remain to be discovered, and already Mr. Powell has more species in his collection than are recorded from Panama in the latest enumeration, so that we may hope that he will be able to let us have a complete collection of them. Sending by post is a little difficult at present, but already several interesting things have arrived, after due inspection by the Censor, so that we hope for a good supply when things resume their normal condition. Orchid importing is just now in a state of suspense, but there must still be many interesting

species that would be welcome to our collections, so that we may hope to see living plants of some of them in due time. It is, we believe, a district from which comparatively few Orchids have been introduced of recent years.

The Orchids of the adjacent State of Costa Rica are also very imperfectly known, and we are glad to find that Mr. Lankester is able to continue his interesting notes, not only on the plants themselves, but on the conditions under which some of them grow. Information of this kind is often difficult to obtain, and many an interesting novelty has quickly been lost for want of information as to the kind of treatment required. A knowledge of the altitude and local conditions are even more important than that of the native country itself. It is a little difficult to realise that two such nearly allied Lycastes as L. leucantha and L. brevispatha grow under such different conditions as those described, but the same thing applies to various other genera, the species of which do not all succeed when grown together. This applies especially to such familiar genera as Oncidium and Dendrobium, and there are Odontoglossums and Masdevallias which succeed better if removed from their own respective houses during certain seasons of the year, in accordance with what is often spoken of as the requirements of the plants. This, of course, means that in a wild state they grow under diverse conditions, and it is a knowledge of what these conditions are that would enable the cultivator to start with more confidence when dealing with some unfamiliar plant.

The number of Mexican and Central American species already known was estimated by Mr. Hemsley, in the *Biologia Centrali-Americana*, as over 900, belonging to 105 genera, but many doubtless remain to be discovered, for some districts have as yet been very imperfectly explored. Many of the species are believed to be extremely local, though a few, especially those from the lower elevations, occur also in the adjacent parts of Tropical America and the West Indies. How many of the species have been in cultivation it would be difficult to say, but the number at present in collections cannot be large, so that there is plenty of room for a revival in the culture of these interesting plants.

Two or three interesting questions are raised by the study of the British Marsh Orchises, which is reported at pp. 162-166, one of which is as to whether, apart from hybridity, Orchis latifolia occurs anywhere with spotted leaves. It is quite clear that the name primarily belongs to the Marsh Orchis with broad, unspotted leaves, in other words, to the one recently described as O. prætermissa, but instead of this being "hitherto overlooked," as the name implies, it can be traced back for a period of over

three hundred years. The use of the name has been extended to cover the form with spotted leaves, and it has recently been sought to limit it to this form, but this, according to the latest evidence, is a hybrid with O. maculata. A recent account of the distribution of the so-called O. prætermissa suggests that the green-leaved form is a constant and distinct species, which is in complete accord with many of the earlier records of the widely-diffused O. latifolia.

The Madeiran O. foliosa affords a quite parallel example, for it has unspotted leaves, hence the surprise felt by Mr. Wolley Dod when he found plants with spotted leaves in his garden. Examination, however, showed that the latter were spontaneous hybrids with O. maculata, which was growing near by. The same hybrid has since appeared with Sir A. Buchan Hepburn under similar circumstances, and the hybrid is now known as O. Hepburnii (see p. 151). This affords a parallel case to that of O. Braunii (see pp. 164, 177), and the question remains whether all the so-called O. latifolia with spotted leaves are not forms of O. Braunii or its derivatives, for the two parents often grow together, and the resulting hybrids are completely fertile.

It is true that there are forms of O. maculata with unspotted leaves, but in such cases the flowers are white or nearly so, and it is simply a case of albinism, for in O. maculata the leaves are copiously spotted with brown as a normal character, not unspotted as in O. latifolia proper, and in O. foliosa. Further observations where O. latifolia grows by itself should help to elucidate a very interesting problem. And several others await solution where allied species grow together and yield natural hybrids.

CATTLEYA IRIS WITH TWO ANTHERS.—A remarkable flower of Cattleya Iris (bicolor × Dowiana), is sent from the collection of Sir Jeremiah Colman, Bart., Gatton Park, in which the lip may be described as half petal, half lip, while the column has an additional perfect anther, containing four pollinia. It illustrates once more the well known fact that the Orchid lip consists of the two lateral stamens of the outer staminal whorl, confluent with the median petal, and modified into petaloid staminodes. If these staminodes happen to revert, by wandering from their usual course and joining the column, the result is that three anthers are developed, each containing the usual number of pollinia, as in the case of a flower of Cattleya labiata previously recorded (*O. R.*, ii, p. 358). In the present case only one stamen has reverted, namely A2 of the Darwinian notation, the result being as follows. One side of the lip (A3) has developed in the usual way, the fleshy substance, purple colour, and the small auriculate side lobe

being normal C. Iris. The other half of the lip has the shape, texture, and bronzy colour of an ordinary petal of C. Iris, the two halves being as sharply defined as if they had been cut and then joined down the centre. The effect on the column is equally marked. On the normal side of the flower there is the usual curve and the rounded angle, but on the other side the presence of A2 results in a sharp angle, and an attempt at straightening the column, with the additional perfect anther and pollinia as described. It is a very interesting and instructive flower. R.A.R.

CATTLEYA CITRINA.

THIS remarkable Cattleya has become rare in gardens of late years, and it may be interesting to give a record of a group shown at a meeting of the R.H.S. some half-a-century ago.

Those who are fond of new sensations must have been gratified by the extraordinary effect produced by a mass of about a hundred plants—all beautifully in flower—of Cattleya citrina, as furnished by Messrs. Low to the exhibition of the Royal Horticultural Society of Tuesday last. Constant groups of admiring visitors might be seen hanging about these strange flowers, and speculating as to the family to which they belonged, though in most instances, we believe, the Lilies rather than the Orchids had the credit of them. And indeed at a distance they might have been mistaken for a bank of daffodils! We hope that Mr. Low's plants may remain in flower for another fortnight, and that he will repeat the display at the next regular Tuesday meeting of the Society, when it might furnish a hint for some interesting remarks. One important lesson, however, may even now be drawn from it, and that is the striking effect which masses of Orchids of the same or nearly related species are capable of producing. No plants gain so much by an orderly, or lose so much by what we can only describe as a higgeldy-piggeldy, arrangement as the Orchids. We are convinced that the time is rapidly approaching—and therefore exhibitors must prepare for it—when a promiscous jumble of air plants and Odontoglots, Dendrobes and Cypripediums, Cattleyas and Burlingtonias, will no more be endured than the mingling of Orchids with Cacti and other incongruous forms would be tolerated now; and yet twenty-five or thirty years ago such barbarisms were of constant occurrence.—*Gard. Chron.*, 1867, p. 488.

This was at the meeting held on May 7th, and at the following meeting another group was shown, on which Mr. Bateman commented as follows: Cattleya citrina, of which Messrs. Low again exhibited a collection, had, he said, a tendency always to grow downwards, and he pointed out the

singularity of the pseudobulbs, which are, as it were, wrapped in silver paper. The plant lasts quite a month in flower, and he never saw a more remarkable sight than a regiment of it, nearly a thousand strong, which he had met with at Messrs. Low's. It was an Orchid with which dry and cool treatment agreed.—*l.c.* p. 549.

CYCNOCHES VENTRICOSUM.

AN inflorescence of the rare Cycnoches ventricosum, Batem., is sent from the collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury. The plant received a Botanical Certificate from the Manchester Orchid Society on September 5th, and Mr. Rogers remarks that it was purchased at the sale of the late Lady Lawrence's collection. Few Orchids have a more remarkable history.

The species is a native of Guatemala, and originally bloomed in the collection of Mr. James Bateman, who described and figured it in 1837 (*Orch. Mex. & Guat.*, t. 5). The plant figured, which had been collected by Mr. G. Ure Skinner in the neighbourhood of Istapa, shows a pendulous raceme of six flowers and an old capsule. Mr. Bateman then remarked: "Among the Orchidaceous genera, Cycnoches will ever be conspicuous, as yielding one of the most notable examples of the strange propensity of its tribe to mimic the forms of animated nature. The genus was founded by Professor Lindley, upon a remarkable plant from Surinam (the C. Loddigesii), the sepals and petals of which bore as close a resemblance to the expanded wings of a swan, as did the column to the long arching neck of the same graceful bird; and these peculiarities are well expressed in the name Cycnoches (*Anglice*, 'Swan-neck'). For upwards of four years the genus had consisted of only a solitary species, when a second made its appearance in the person of our present subject. . . . The capsule represented in the drawing," Mr. Bateman added, "adhered to the plant on its arrival in this country, and a most interesting relic it is, the hugh size of the seed vessel being scarcely less remarkable than the extreme minuteness of the seeds, with an innumerable quantity of which it was at one time filled."

Shortly afterwards C. ventricosum became involved in a curious mystery, which was not cleared up until half-a-century later. At t. 40 of the same work Mr. Bateman figured a Cycnoches Egertonianum, of which he remarked: "Strange things—and no less strange than true—have already been recorded of Orchidaceous plants, but the case which is represented in the accompanying plate casts into the shade all former frolics of this Protean tribe. The facts are briefly as follow. Among Mr. Skinner's

earliest Guatemala collections, attention was particularly directed to the specimens of a plant which to the habit of a Cycnoches joined the long pendulous stems of a Gongora, and for the possession of which, in a living state, no small anxiety was entertained. Some plants were speedily transmitted by Mr. Skinner, but these, on flowering, proved to be merely the old C. ventricosum. A mistake was, of course, suspected, and Mr. Skinner, being again applied to, sent over a fresh supply of plants, for the authenticity of which he vouched; but these were scarcely settled in the stove, when flowers of C. ventricosum were again produced. Mr. Skinner being importuned for the third time, and being then on the point of returning to this country, determined to take one of the plants under his special protection during the voyage, which, flowering on the passage, seemed to preclude the possibility of further confusion or disappointment. The specimens produced at sea were exhibited, and the plant itself placed in the stove at Knypersley, where it commenced growing with the utmost vigour. The season of flowering soon arrived, but brought with it a recurrence of the former scene of astonishment and vexation, for the blossoms, instead of those of the coveted novelty, were not distinguishable from the old C. ventricosum. They were still hanging to the stem when the inexplicable plant sent forth a spike of a totally different character, and which was, in fact, precisely similar to the specimens gathered in Guatemala, and to those produced on the voyage. It is, at present, impossible to attempt any explanation of so strange a phenomenon, especially on the supposition that the two forms of flower are analagous to the male and female blossoms of other tribes, for C. ventricosum alone not infrequently perfects seeds."

In 1843, Lindley figured what he called "a flower-spike bearing flowers of Cycnoches ventricosum and C. Egertonianum *intermixed*" (*Bot. Reg.*, 1843, Misc. pp. 75-77), this having appeared in the collection of R. S. Holford, Esq. Other species were subsequently described, and in 1852 we find an enumeration by Lindley of the "known forms of this strange genus" (*Paxt. Fl. Gard.*, iii. p. 6), where it is remarked of C. ventricosum: "Sports to Egertonianum; and even towards the cucullate form of C. Loddigesii, as was ascertained by Sir P. Egerton in 1849. But what, again, is C. ventricosum? Who knows that it is not another 'sport' of C. Loddigesii, which has indeed been caught in the very act of showing a false countenance, something wonderfully suspicious, all things considered. and justifying the idea that it is also a mere Janus, whose face is green and short on one side, and spotted and long on the other."

C. ventricosum now seems to have been regarded as capable of almost anything, and we find Reichenbach including C. Warscewiczii as a "sexus?" (*Walp. Ann.*, vi. p. 560), while Hemsley added C. pentadactylon. Lindl., as a synonym (*Biol. Centr.-Amer.*, iii. p. 263), with the remark,

"The flowers of this species appear to be sexually trimorphous, like those of the Cataseti, but which are respectively the male, female, and hermaphrodite remains to be determined."

The real explanation came when a living plant of C. Egertonianum was sent to Kew by the late Richard Pfau, and soon afterwards repeated the phenomenon which Bateman sought to represent on his famous t. 40, namely, the production of two kinds of flowers on the same pseudobulb. But there was this discrepancy, that while one of them was C. Egertonianum, the other was not C. ventricosum—that is to say it had not the elongated column of C. ventricosum, though the colour was green. In short, the two kinds of flowers proved to be the two sexes of C. Egertonianum, the female having a short, stout column. The next discovery was that the so-called "sport" of C. ventricosum, of which the sketch and the actual flower are preserved in Lindley's Herbarium, was also a female, while the original C. ventricosum was a male. Here, then, were the two sexes of each species, and as Bateman's plate showed the impossible combination of two different kinds of males on the same pseudobulb it was clear that the artist had introduced an error, probably in restoring the withered green flowers by the help of the earlier drawing. This explanation was submitted to Mr. Bateman, who was then living, and he replied that it was probably correct, though he could not recall the circumstance of how the drawing was made. He, however, gave a very graphic account of the whole of the circumstances (*O.R.*, vi. p. 57).

The question now appeared in a totally new light, for the other forms mentioned also fell away as simply cases of confusion, and showed how little was really known about C. ventricosum. There are two alleged figures of it (*Maund, Bot.*, ii. t. 54, and *Ann. de Gard.*, iv. t. 187), but both represent C. chlorochilon, Klotzsch. And when the true C. ventricosum did at length reappear in cultivation we find it recorded under the name of C. chlorochilon (*Gard. Chron.*, 1888, ii. p. 326).

The true C. ventricosum appears to have been met with by Warscewicz at Chiriqui, and recorded by Reichenbach (*Beitr. Orch. Centr.-Amer.*, p. 23), three flowers from this collection being preserved in Lindley's Herbarium, which are the only native ones we know of. In 1902 a living plant of a Cycnoches was sent to Kew from the Botanic Station, Belize, British Honduras, which on flowering proved to be C. ventricosum. Of cultivated specimens, besides the recent materials, there is Bateman's orginal, and the female flower from Sir P. Egerton. It is unfortunate that Bateman's so-called "sports" and the one from the Holford collection were not preserved, for with them the confusion would probably have been cleared up earlier. There is a possibility that the Bridge Hall plant may also produce female flowers if grown well.

R.A.R.

ODONTOGLOSSUM MACULATISSIMUM.

HYBRIDS between the Mexican Odontoglossum maculatum and the Columbian species are still very few in number, and the first of the series, which is here represented, is a striking plant. It was raised by M. Ch. Vuylsteke, Loochristi, Ghent, and exhibited at the Ghent Quinquennial Show in April, 1908. The parents were O. maculatum and the form of O. armainvillierense known as ardentissimum, the name being

Fig. 21. ODONTOGLOSSUM MACULATISSIMUM.

given to indicate the origin. The hybrid bore a raceme of nine flowers, which show much of the influence of O. maculatum, particularly in the ample lip, the shape of the column, and in colour. The markings on the sepals and petals may be described as dark bronzy brown, and on the former they extend so far as to nearly obliterate the light yellow ground colour. The lip is more white, with a large red-brown blotch in front of the yellow crest, and a few additional blotches near the undulate margin. It is a very interesting and striking hybrid.

CIRRHOPETALUM PULCHRUM VAR. CLIFTONII.

THE rare Cirrhopetalum here figured is a plant which received a First-class Certificate from the R.H.S. in August, 1909, when exhibited by Messrs. Charlesworth & Co., Haywards Heath. It is a handsome thing, and is characterised by the flowers being copiously blotched with rose on a pale cream ground. Its origin does not appear to have been recorded, but

Fig. 22. CIRRHOPETALUM PULCHRUM VAR. CLIFTONII.

the typical C. pulchrum is a native of Halmahera, or Gilolo, a large island of the Moluccan group, whence it was introduced by Messrs. Linden, Brussels, over thirty years ago. It was described and figured in 1886 (N.E. Br. in *Ill. Hort.*, xxxiii. p. 139, t. 608). In the original form the dorsal sepal and petals are shown of a more nearly uniform dark rose colour. C. pulchrum is said to be allied to C. elegans, Teijsm. & Binn., also a native of the Moluccas, which was described in 1862 (*Tijdschr. Nederl. Ind.*

xxiv. p. 310), when it flowered in the Buitenzorg Botanic Garden, Java. We only know the latter from description, but rather suspect that C. pulchrum will prove identical with the older plant when materials are available for comparison. It is also comparable with C. Thouarsii, Lindl., the original species of the genus, which, however, has very strongly ciliate petals. This is a native of Mauritius and Madagascar, and is also found in Polynesia.

As regards the arrangement of the flowers in Cirrhopetalum, we may repeat the remarks of Lindley when describing C. chinense (*Bot. Reg.*, 1842, Misc. p. 37. There is no longer any occasion for speculative minds to occupy themselves with the important investigation of the cause that may have led the Chinese to invent strange figures of men aud women with their chins in perpetual motion, for here is an explanation of it. We have here a plant from China, one of whose lobes is exactly a tongue and chin, which are so unstable as to be in a state of continual oscillation. The flowers are arranged in a circle, and all look outwards; so that on whatever side the umbel is regarded, it still presents to the eye the same row of grinning faces and wagging chins.

THE POLLINIA OF ORCHIDS.

A CURIOUS proposition as to the origin of the pollinia of Asclepiads is cited at page 184, and invites a similar enquiry as to the origin of these bodies in Orchids, for there is a perfect analogy between them, as was long ago pointed out by Robert Brown, and later by Darwin. Two features are possessed in common by the groups mentioned—so widely separated in other respects—namely the cohesion of the pollen grains into masses, called pollinia, and the production of a viscus by which they are attached to the bodies of the fertilising insects, this viscus being secreted by a special organ called the rostellum. Brown pointed out that there was no real addition to the number of organs, the apparent addition being a modification of the stigma. He also added that there was what might be called a third peculiarity in the two groups, the apparent necessity for an unusual number of pollen tubes to act in concert.

Darwin sought for the origin of these peculiarities, and attributed them to the action of natural selection working upon different materials. the change being effected through the preservation of successive variations of a useful character, identical results thus being effected in two widely separated groups by modifications of the self-same organs, but with considerable differences in detail. It is this conclusion which is challenged by Willis in his question as to the origin of the pollinia in Asclepiads, which is

accompanied by the perfectly gratuitous assumption that they arose directly at a single operation. The question is only one out of over a dozen others, which are grouped under the following general enquiry: "How did the following commence, and what advantage was gained by the rudimentary beginning, sufficient to insure the completion of the organ in question? . . . where does Natural Selection come in as formative or explanatory?" The pollinia of Orchids are not mentioned, but they are well adapted to answer the enquiry, because the stages of progress are so well marked that one may almost trace their development step by step in the different groups.

The pollinia of Orchids are very diversified in character, and in many cases exceedingly complex, but the character that they possess in common is that they are formed of compound pollen grains, grains that are united together in fours. In the highly specialised tribe Vandeæ the pollinary apparatus consists of a combination of pollinia, stipes and gland, the two latter derived from the rostellum, but in Epidendreæ, Neottieæ and Ophrydeæ the rostellum does not produce a separable stipes, though bodies somewhat similar in appearance, known as caudicles, are in many cases produced as an outgrowth from the pollinia. The significance of the difference will be seen presently. In proceding back to the more primitive Cypripedieæ we find that neither rostellum nor pollinia are developed, the pollen grains being simple, though cohering in a sticky mass through their own viscidity. Finally, in the ancestral Apostasieæ the absence of a rostellum is accompanied by the pollen grains being both simple and not cohering together, so that the pollinary condition of an ordinary Monocotyledon is reached.

Some authors regard the Apostasiæ as forming a distinct Natural Order, but this view would also exclude the Cypripedieæ, which are very similar in general structure. In fact Bentham unites the two, but it is better to regard them as distinct tribes of the sub-order Diandræ, which is distinguished from Monandræ by the different staminal arrangement. The point, however, is immaterial for the purpose of this enquiry, for their structure and relation to each other remain, whatever we may call them. It may make the point clearer if we say that there is a large natural group of Monocotyledons, called Microspermæ, from the organisation of its numerous minute seeds, and that this is divided into two Natural Orders, Burmanniaceæ, with regular flowers, and Orchidaceæ, in which they are highly irregular. The latter is again divided into two sub-orders, Diandræ, with two or occasionally three stamens, simple pollen grains, and no rostellum, and Monandræ, with a single stamen, compound pollen grains, cohering into pollinia, and a rostellum. These groups are perfectly natural, and the characters given indicate their evolutionary progress.

We may attribute the origin of the Orchidaceæ to the modification of the flowers as an adaption to fertilisation by insects, two stamens of the

outer whorl uniting with the median petal to form the lip, and others becoming confluent with the styles to form a column, the nearest existing approach to the ancestral condition being the Apostasiæ, in which the floral perianth is nearly regular, the column very short, the two, or occasionally three, anthers but little modified, the pollen grains free and simple, and the stigmas unmodified. The Apostasieæ are a small Malayan group, consisting of three genera and rather over a dozen species.

The Cypripedieæ may be regarded as a higher development of the same type. Here the lip has become slipper-shaped, the column further developed, the dorsal stamen dilated into a barren staminode, partly closing the basal opening of the lip, the anthers abbreviated, the pollen grains simple but coherent into a glutinous mass by means of a viscous modification of their outer coat, and the stigmas dilated into a convex body, with a granular surface. The flowers are fertilised by bees, which enter by the front opening of the lip, crawl past the stigma, and emerge by the basal openings, their backs becoming smeared during the process with the glutinous pollen, to be in turn left upon the stigma of the next flower visited. The group contains four genera and some eighty species, and is found in tropical Asia and America, with extensions right round the northern hemisphere. It marks the culminating development of the sub-order Diandræ.

The production of compound pollen grains and their union into pollinia, with the development of the rostellum, originated with the sub-order Monandræ, which is characterised by having only a single fertile stamen. It was a concerted action by two distinct organs of the flower, the object being the economy of pollen, and the co-operation proved so succsssful that it has been continued and extended until the combined pollinary apparatus of the Vandeæ—half male, half female—which Bentham called the pollinarium, has been reached. This concerted action has been so successful that the Monandræ have attained an almost world wide distribution, and now contains several thousand species, with a marvellously diversified structure.

The pollinia proper are simply the combined pollinary contents of the anther cells with any developments they may assume, as for example the caudicles of Cattleya and others, which are composed of modified pollen grains. The pollinia vary in number, shape, and consistency in the different groups, according to the degree of development. In the simplest forms, as among the Neottieæ, the pollinia are two in number, corresponding to the two cells of the anther, extremely friable, and without any trace of a caudicle. Somewhat higher, the pollinia are collected into little packets, these being attached by fine threads to a central axis, which terminates in a slender caudicle, and is ultimately attached to the viscid gland secreted by the rostellum. Among the Epidendreæ and Vandeæ the pollinia have become waxy, and the number increased to four, six or eight, by division of

the anther cells; in the higher forms caudicles being developed by which they are attached to the viscid gland of the rostellum. The caudicles vary greatly as regards their development, and in the remarkable Bonatea speciosa they are over three times as long as the somewhat elongated pollen masses, yet both belong to the anther, while the viscid gland attached to the other end of the caudicle is formed by the rostellum, which is perfectly distinct from the anther in the early stages of the flower.

The rostellum is a modification of the median stigma, and its primary function is to secrete a viscus to attach the pollinia to the bodies of the fertilising insects. In the higher forms it acquires additional and more complex functions, though always occupying a position subordinate to the pollinia. The primitive rostellum simply exudes a viscid fluid below the anther, which is first smeared on the body of an insect which visits the flower, and then becomes attached to the base of the pollinia as the insect retires, the result being that the pollinia are carried away, and left upon the stigma of the next flower visited. A later stage is that the outer surface becomes membranous, serving to protect the underlying viscus. Then the viscus acquires the property of drying very quickly on exposure to the air, and the membrane develops in different ways, regulating the shape of the gland; in the Orchis group forming a complete pouch, which ruptures at a slight touch when an insect visits the flower. It may also dilate and assume the additional property of preventing the pollinia from falling on the stigma of the same flower. Again it may become trilobed, as in Habenaria and Bonatea, the side lobes forming elongated channels for the support of the caudicles of the pollinia.

In the large tribe Vandeæ another remarkable development is seen, a part of the rostellum becoming separated as a zone of hyaline tissue, dehiscing at maturity and forming what is known as the stipes, to which the pollinia are attached at one end, while the gland is situated at the other end. When an insect visits the flower and touches the gland the whole combined organ comes away together. This stipes may be again subdivided longitudinally, forming two distinct stipes, each with a single pollinium attached, and these may be attached to a single gland, as in Listrostachys, or to two distinct glands, as in Mystacidium. In some of the higher Ophrydeæ the rostellum may also be divided, giving the appearance of two rostella, though they are only divisions of one original one.

In Catasetum there is a further development, for the two sexes are entirely separated, yet in the male flower not only the stipes and gland of the pollinia, but the sensitive antennæ, which announce the visit of the insect, and set free the mechanism which ejects the whole pollinary apparatus on to the insect's back, with a sudden jerk, are developments of the rostellum, and thus are female in origin. The development is remarkable, quite apart

from the sensitive mechanism, for we have a female organ—one of the stigmas—first losing its proper function and assuming another, then producing a separable part as an adjunct to the male pollinary apparatus, and finally, on the sexes becoming separated, remaining as an essential part of the organisation of the male flower.

In all this marvellous diversity and specialisation of detail in the pollinary apparatus we have a beautiful example of the working of Natural Selection, as defined by Darwin, and an effective answer to the enquiry by Willis as to the origin and utility of pollinia in Asclepiads—for it must be remembered that there is a complete analogy between the pollinia of Asclepiads and of the higher Orchids. And the assumption that they arose at a single operation is emphatically negatived. The idea will not bear a moment's consideration, and it is remarkable to find it put forward at the present day as a serious proposition.

Natural Selection is a great controlling force. It acts upon variation—or the inherent power of organisms to respond to the compelling stimulus of changing conditions of environment—and controls its direction. In its broad results it is strictly comparable with those obtained under artificial selection by human caprice and necessity, though its method of working is not so obvious, and it is not wonderful that its processes, carried on during thousands of generations, should have created, as Darwin well puts it, "an endless diversity of co-adapted structures in the several parts of the flower for the same general purpose."

BULBOPHYLLUM BECCARII.

ATTENTION has just been called to this remarkable Bulbophyllum—the giant of the genus—which flowered in Messrs. E. G. Henderson's Nursery at Maida Vale in 1880, and was figured at t. 6567 of the *Botanical Magazine*, but quickly disappeared from cultivation. The species was described by Reichenbach in 1878, as follows:—

This gorgeous Orchid would appear to have been discovered in 1853 by Mr. Thomas Lobb. A leaf, quite like the materials I have now at hand, was brought home by this excellent traveller, and Mr. Bateman showed it in one of his lectures at the Royal Horticultural Society. It is now kept in Dr. Lindley's herbarium at Kew. Much later, full information about the same thing came to Europe. It was in March, 1867, when M. Odoardo Beccari found complete materials in Borneo. When I was at Florence the autumn before last I admired those wonderful collections of capital specimens, judicious sketches, preparations in spirits, woods, fruits, all with corresponding numbers, all wonderfully well kept, though collected

in the wildest parts of the Malayan and Papuan Archipelago. One of the pets of this excellent collector was this most admirable Orchid. It twines with its mighty stems spirally around trees, and excites the highest interest by its grand leaves. The flowers appear in dense, cylindrical, nodding racemes on very long pedicels. They are equal in width to those of a Bulbophyllum leopardinum. They are light brownish, and painted with violet. The brown lip has a violet hue ('conspute violacea'). The peduncle itself is rosy with violet lines. It gives me great satisfaction to dedicate this unique Orchid to M. Beccari, the energetic and most successful traveller. He would be agreeably surprised to see his Bornean friend in flower in Europe. It appears there is good hope for this. The plant has appeared a third time, and is now in our reach. Mr. Bull has been so very lucky and successful as to get it alive."—*Gard. Chron.*, 1879, i, p. 41.

Over a year later an additional note appeared: "A great stir had been caused by the unexpected flowering of this remarkable plant; we had not expected to see it so soon in such a state. When I obtained the case containing the inflorescence I smelt the most hideous stench of old fish that can be imagined. This had been observed by Odoardo Beccari, who wrote: 'I fiori sono fetidi come Arum Dracunculus." It bloomed in the establishment of Messrs. E. G. Henderson & Son, at Maida Vale, in the Nepenthes house (*l.c.* 1880, ii. p. 326). Shortly afterwards it also bloomed with Messrs. James Veitch & Sons, at Chelsea (*l.c.* p. 526).

The *Botanical Magazine* figure was prepared from Messrs. E. G. Henderson's plant, and Sir Joseph Hooker spoke of it as follows: "This is in many respects one of the most gigantic of Orchids; I know of none with so stout a rhizome, so large a leaf, or such massive inflorescence. On the other hand, specimens of various species of Vanilla are far more bulky; and I have been credibly informed of a single plant of Vanda teres in Birma being a sufficient load for an elephant. In one character B. Beccarii transcends all other Orchids, if not all other vegetables, and that is in the fœtor of its flowers, which is loathsome beyond description; of the same nature as that of Amorphophallus and of other Aroideæ (that of putrid fish), but more diffused, penetrating and enduring. Although the drawing here given was executed in an airy room, close to a large open window, the artist was repeatedly overpowered by it, and was finally made for a time really ill.

It is perhaps not remarkable that a plant with such a record should so quickly disappear: it may or may not have proved an intractable subject, but it offered little inducement for perseverance in its culture. It is probable that the leaf preserved in Lindley's Herbarium was obtained during Lobb's visit to Labuan and North Borneo. R.A.R.

ONCIDIUM AMPLIATUM.

ONCIDIUM is a large and widely-diffused genus which occupies a prominent place in our collections, though some of the species seem to have become rare of recent years. Among the latter is the Central American

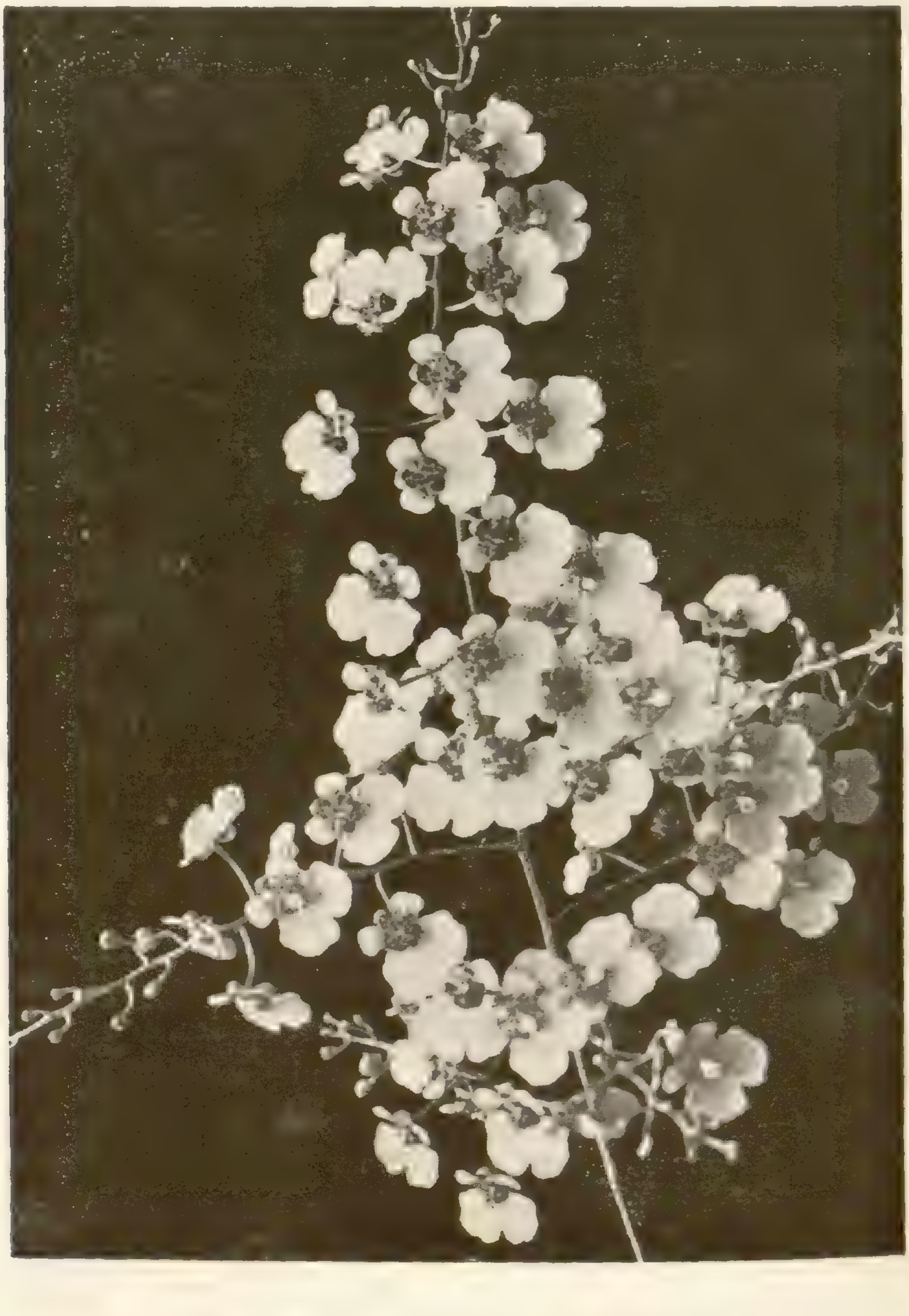

Fig. 23. ONCIDIUM AMPLIATUM.

O. ampliatum, which is represented in the annexed figure from a plant which flowered in the collection of Dr. A. W. Hoisholt, of Stockton, California. The flowers are bright yellow, with a few brown markings at the base of the segments, and are borne in a compact panicle. The

species has long been cultivated, having flowered for the first time in Europe in the collection of Richard Harrison, Esq., of Liverpool, in March, 1835.

ONCIDIUM VARICOSUM (fig. 24) is a Brazilian species, and one of the

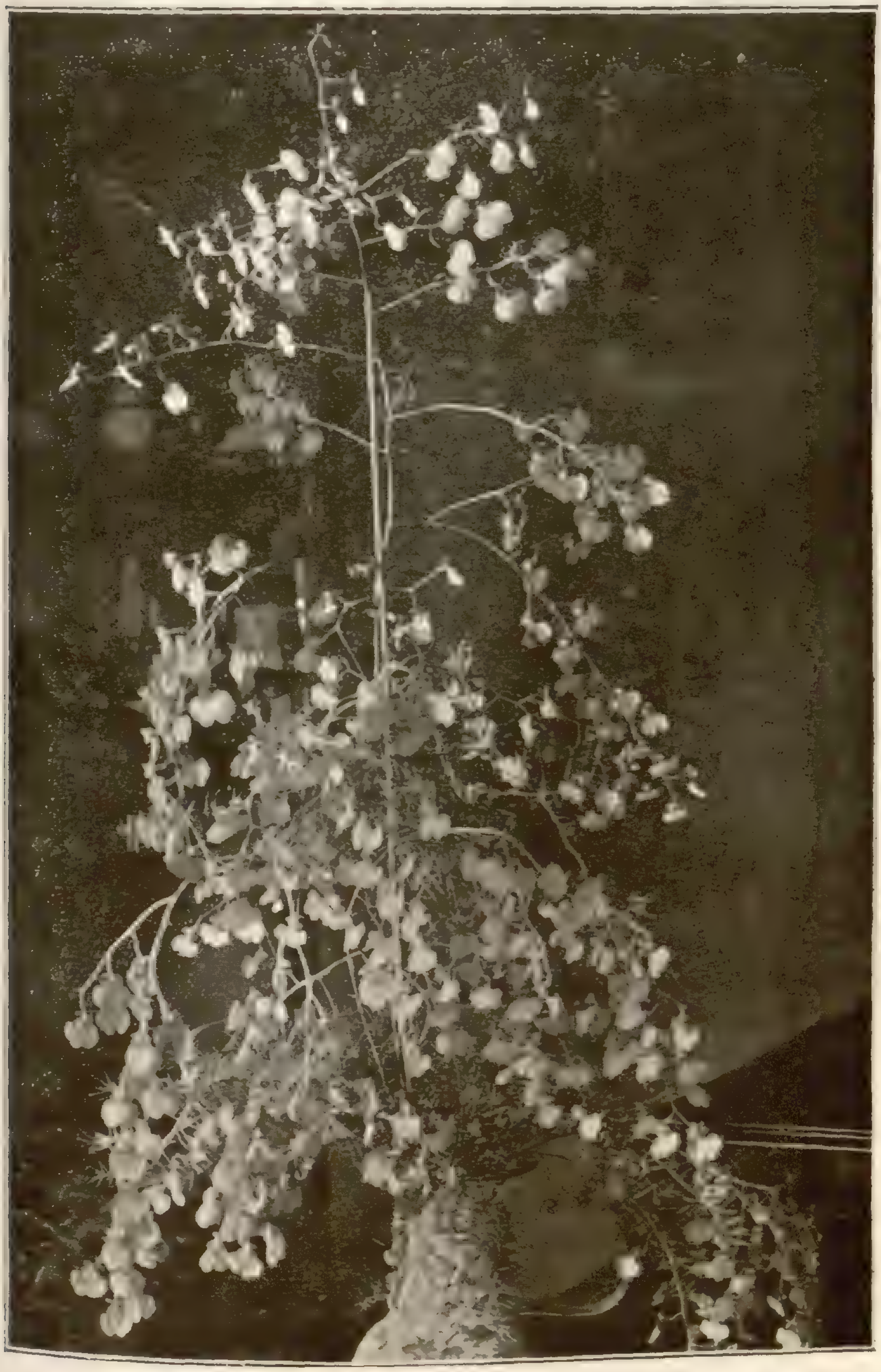

Fig. 24. ONCIDIUM VARICOSUM.

most familiar in gardens. It is of great decorative value when well grown, as may be seen from the annexed figure, representing a vase with six spikes, photographed by Miss Constance Wrigley. The tallest spike was six feet high, with seventeen branches and an aggregate of 260 of its bright yellow

flowers. It is a good plant for cutting, the flowers having been in the drawing room for a week when photographed. The species was described in 1837, but it was not until twelve years later that it flowered for the first time in this country. It varies greatly in the size of its flowers, and in the variety Rogersii the lip measures as much as two inches across. It succeeds under intermediate house treatment.

The genus Oncidium is remarkable for its extensive vertical range, some of the species occurring in hot river valleys or near the coast, others at moderate elevations, and a few are found on the Cordillera at altitudes of 5000 and 9000 feet, these differences being reflected in the kind of treatment required.

CALENDAR OF OPERATIONS FOR SEPT.-OCTOBER.

By J. T. BARKER, late of The West Hill Gardens, Hessle, E. Yorks.

AUTUMN is a period when the majority of Orchids will be completing their season's growth, and the object should now be to consolidate and mature this as much as possible, so as to prepare the plants for the coming winter. September and October are usually very variable months, bright sunny weather often alternating with spells of cold and wet, so that it is difficult to prescribe any exact course of treatment. A great point to aim at is to prevent the outside fluctuations from reaching the plants, and this is effected by due control of the heating and ventilating apparatus, and by modifying the amount of atmospheric moisture in accordance with the outside conditions.

Differences of locality, and in the positions and structure of the houses, must also be taken into consideration, as these affect their capacity for holding atmospheric moisture. Everything depends upon a proper balance being maintained in the different departments. The warmest division should always be kept in a fairly humid condition, to counteract the drying effects of the artificial heat necessary to maintain the proper temperature. But even here, damping down should not be done too frequently, especially in low lying or damp districts, as the condensing moisture may in excessive cases do much harm in causing drip from the roof, which may be fatal to delicate plants. Until there is need of more artificial heat—which may occur now at any time—damping down to a moderate extent morning and evening may be indulged in. It is not good practice to keep on syringing or spraying each time the air in the houses gets in the least dry, especially in the autumn when a number of the plants are finishing up and preparing for rest.

It is essential at this season that plenty of sunshine should reach such

plants as the deciduous Calanthes, Thunias, Cattleyas and Lælias, Vandas, Catasetums, Cycnoches, Mormodes, Dendrobiums, &c., which have finished their growths, and all those plants which require well ripening or maturing to produce a full crop of flowers. This is not done by starving the plants for water, but by a systematic application of heat, light and air to all the plants, without causing any great fluctuation in the temperatures.

VENTILATION.—In order to enable the new pseudobulbs to mature, and to consolidate the growths generally, air and light should be admitted, and a drier atmosphere maintained, in order to prevent or check the development of spot, which practically all Orchids are subject to if grown in an unsuitable atmosphere.

WATERING.—In the absence of sunshine, which often occurs in the two months under consideration, the plants do not take up as much water as when in full growth, and a good deal of judgment is necessary in giving and witholding water, so the operator must be guided by the individual state of each plant, whether in active growth, at rest, or approaching the flowering stage.

SHADING must be gradually reduced as the sun loses its power, due regard being paid to those plants that are liable to injury if exposed to strong sunlight. Amongst those that are readily affected by too much sunlight are Phalænopsis, Miltonias, Phaius, Bolleas, and many others, both of a thin and thick-leaved nature. Differences of locality must, of course, be taken into consideration, for circumstances vary to such an extent that what is advisable in one district may be quite unsuitable in another. The climatic conditions of the south coast of England, for example, are different from those of Yorkshire or East Lancashire, and the atmosphere of urban districts is often less clear than that of the open country. When the blinds or shadings are down during the middle hours of the day, care must be taken that the temperatures do not fluctuate through over-ventilation or draughts, especially in houses where the plants are still in full growth. The temperatures during October should be gradually reduced to the winter figures, and owing to the restrictions upon fuel it will be good practice to inure the plants to the minimum temperature possible for their welfare. Provided this is done judiciously and with discretion no harm will accrue.

CLEANLINESS.—The cleaning of the houses must be taken in hand as soon as the leaves have fallen from the trees, and in most districts this is a common necessity, as the accumulation of dirt and other matter upon the roofs prevents the necessary light from reaching the plants during the short dark days of winter. At the same time the inmates of the houses should be carefully cleaned and arranged, so that every plant receives the maximum amount of light. In order that the leaves should perform their proper functions, it is necessary that they should be kept clean, although at the

present it is somewhat difficult at times to put this precept into practice, owing to the shortage of labour.

CYPRIPEDIUMS of the winter-flowering section, both species and hybrids, will now be pushing up their flower scapes, and should have their leaves carefully cleaned, and the scapes neatly tied to thin stakes as soon as they become long enough, as if they become twisted the flowers lose much of their beauty and utility. Of the summer-flowering section there are at the present time many valuable and beautiful varieties, and any of these that have passed out of bloom, and are in need of new rooting material, may have attention, using a compost similar to that previously recommended. It is a mistake to keep these plants, or any others, in a half decomposed compost, if fine flowers are required and expected.

DENDROBIUMS.—These plants, like the others, have responded to the favourable season which is now fast drawing to a close. In the deciduous section those species and hybrids which produce their flowers early in the new year have now finished their season's growth, and should be induced to rest as long as possible, as without sufficient rest the succeeding growth is unsatisfactory. Some kinds are later in completing their growth, but as soon as this is accomplished they should be removed to the resting house, where the drier and more airy conditions will help to mature them, and enable them to produce an abundant crop of flowers. The completion of growth in these plants is easily seen by the last leaf of each pseudobulb being fully developed. They should receive water at the roots in much less quantities, and only sufficient should be given to keep the leaves and roots in healthy condition. Shrivelling must not be allowed under any circumstances. The plants that are still actively growing should have liberal treatment, and be induced to reach the resting stage as soon as possible, so that they may also be treated as above advised.

Plants of Dendrobium Phalænopsis and D. formosum that are pushing up their flower spikes may have abundance of heat and water whenever they become dry, but when their flower spikes are removed much less will suffice. In foggy districts these two beautiful species should be brought into bloom as early as possible, thus avoiding the pernicious effects of fog upon their flowers. The evergreen section, such as D. thyrsiflorum, densiflorum, Farmeri, &c., as they complete their season's growth, should receive similar treatment to that afforded the deciduous species, for they also enjoy a long season of rest.

CATTLEYAS AND ALLIES.—During the next few weeks the autumn-flowering members of this large family will make a great show, and enliven the houses immensely. There are now so many beautiful hybrids that produce their flowers at this season, that when the times again become normal we may look for displays of flowers which will rival those that were

formerly possible only in the early summer months. C. Warscewiczii (gigas), Warneri, Hardyana, and others that have passed the flowering stage, will now commence to push roots from the base of their pseudobulbs, and may receive any necessary attention as regards repotting. Lælia tenebrosa, L. purpurata, and many Læliocattleyas, Sophrocattleyas, &c., may also have attention in this respect, but care should be taken that only sufficient water is applied to the new compost to prevent the plant from shrivelling. It will be observed how quickly the roots develop in the new material, and if the plants are kept on the dry side during the winter months the new growths will break away readily and strong in the spring.

The autumn-blooming Cattleyas, such as C. labiata, C. Bowringiana, and many hybrids from them which produce their flowers at a later period than those previously mentioned, will now be in an advanced stage of growth, and some will be pushing up flower spikes within the sheaths. These plants, many of which are feeble-rooting kinds, suffer perhaps more than any other Cattleyas from an excess of water, and therefore should only have sufficient water to keep them plump and healthy after flowering, and until they commence to grow again in the spring only sufficient should be given to keep them from shrivelling.

MASDEVALLIAS.—The robust-growing M. Harryana and similar species should now have attention, if the rooting material requires renewing. These plants will always command a place in our collections on account of their unique colour, and if not grown to the extent they formerly were, there is no more beautiful object in our Cool houses than a well grown specimen of any one of them. Their treatment has been fully dealt with in former numbers, and we may look forward to additional interest being taken in them at any time.

DECIDUOUS CALANTHES.—These useful winter-flowering plants are now showing their flower spikes from the base of the newly-made pseudobulbs. The plants should be afforded ample space, and as much light as possible, and water should be applied to them whenever they become dry. An occasional watering with weak liquid manure will also be beneficial, should the pots be full of roots. The later-flowering varieties of the C. Regnieri section are now fast making up their new bulbs, and still need water at the roots whenever they become dry. As the flowers begin to expand, the atmosphere must be kept drier, and the water at the roots should be gradually reduced. The temperature at night should not be allowed to fall below 65° until the flowers are expanded, when they may be placed in a house a few degrees lower, where the flowers will last considerably longer than they would in a high temperature.

CYMBIDIUMS.—Strong healthy plants of Cymbidium Tracyanum, Lowianum, insigne, and many hybrids that are now showing flower spikes

should have plenty of water at the root, others which have completed their growth, and which are not yet showing should be kept rather dry for some little time longer, otherwise growth will commence and the plants fail to bloom. The hybrids of this family comprise a most interesting and beautiful class of plants, which produce fine spikes of bloom, and last a considerable time, either as cut flowers or upon the plants.

PHALÆNOPSIS AND ALLIES.—With the shorter days this bulbless group of Orchids, which includes Vanda, Aërides, Saccolabium, Angræcum, and others, will need less water, both at the root and in the atmosphere. When the tips of the roots are sealed over, the plants will only need water in sufficient quantities to prevent the leaves from showing signs of distress. All should enjoy a light position during the dark days of winter. The species of Phalænopsis which produce their spikes early may have sufficient water to keep them plump and healthy. These plants need considerable attention during the winter months to keep them in the best of condition.

LYCASTE SKINNERI.—These plants are now completing their season's growths, but any that are in a backward condition may be placed in a warmer house until the pseudobulbs are developed. Although they thrive in the Cool house during the summer months, it is advisable to remove them to a slightly warmer structure for the winter. As the pseudobulbs mature, the water supply should be reduced, and a temperature of 50° to 55° maintained. Such Lycastes as cruenta, aromatica, &c., require similar treatment. Anguloas also require the same treatment, but must receive rather more heat the whole year round.

DISA GRANDIFLORA should be repotted at the present season, and the best material to use is one similar to that used for Odontoglossums, into which a fair proportion of broken crocks and course silver sand has been added to keep the compost open. Owing to the great amount of moisture in the way of spraying, &c., necessary to their good cultivation, it is most important that the compost should not become a waterlogged mass. Now that seedlings of this, and other difficult Orchids, have been raised in this country, we may hope that many of these refractory plants may become more amenable to cultivation, and that we as cultivators may be able to produce these plants in their full glory. They delight in a cool, moist, and airy position at all times, and must be constantly protected from insect pests.

ONCIDIUMS.—In the Cool house several species of Oncidium, such as O. crispum, Forbesii, varicosum, and others, will be developing flower spikes and preparing to bloom. It is very easy for these plants to exhaust themselves so much by overflowering that they are useless afterwards, and, as we may never get them imported again in the quantities we once did, it

is important to keep the best varieties as far as possible in good health. To prevent deterioration from this cause, it is advisable to remove the flower spikes from weakly plants as soon as they are observed, and on the strongest plants as soon as all the flowers are open. So far this genus of Orchids has not been much touched by our hybridists, and until greater results are achieved we must depend on the imported species.

GENERAL REMARKS.—Every effort must be made to place our plants comfortably in their winter quarters, and to eradicate the insect and other pests which trouble us at all seasons. Matters that appear trivial may make the greatest success, hence the necessity of looking carefully into the smallest details. It is obvious that the welfare of our plants depends entirely upon the conditions provided for them, and at the present time we are all undoubtedly working under the greatest difficulties, both as regards labour and materials. But we must watch for the silver lining of the cloud which still hangs over us, and which we all hope may soon pass away, and enable us again to enjoy to the full the cultivation of these plants in which we are all so deeply interested.

ORCHIS MASCULA AND O. MORIO.

THE July issue of the *Journal of Botany* contains (pp. 193-197) some "Notes on Orchis mascula and O. Morio," by Col. M. J. Godfery, F.L.S., who in May last made an expedition from Corfe Castle, Dorset, to a locality where the two species grow together, mainly in the hope of finding hybrids between them. In this he was not successful, but he made some other interesting observations.

The locality was a large field, carpeted with thousands of cowslips, and with two large colonies of O. mascula, which the country people there call "Regals," and as they were magnificent in all the glory of full bloom, it is added that they well deserved the name. O. Morio was also abundant, but mostly grew in other parts of the field, though a few scattered plants were intermixed with O. mascula. Col. Godfery calls attention to the observations of Sprengel that the spurs of these and some other Orchids contain no free honey, hence he designated them 'false nectaries,' and thought that these plants existed by an organised system of deception. Darwin did not believe in this, considering that the intelligence of bees was of too high an order to allow of their repeated deception by such an artifice, and he pointed out that the spur consists of two layers, and concluded that honey was secreted between the inner and outer membranes, and that it was obtained by the insects by puncturing the inner layer. Delpino also made observations on the subject, and remarked that the fluid found

between the two layers was not honey, and that these Orchids had lost their power of secreting it, and hence are on the high road to extinction.

Col. Godfery points out the desirability of further observations and experiments, for in any case O. mascula and O. Morio are locally abundant, certainly not tending towards extinction, and there can be no doubt that both are effectively fertilised in this country. Col. Godfery saw no fewer than six humble bees of two species visit the flowers of O. mascula, and in one case got close enough to see the insect emerge from the flower with the pollinia affixed to its head. He also found pollen on the stigma in several cases. On another day he examined four spikes of O. mascula, of which 37 flowers were expanded, and in 23 cases both pollinia had been removed, while in 16 the stigmas had been fertilised.

On another day he examined a field of O. Morio in full sunshine, and only saw two bees visit the flowers, one of which had two pairs of pollinia attached to its head. But although there was so little doing on this day, he obtained evidence that O. Morio is freely and effectively fertilised, for he collected seven spikes whose flowering was over, and found 44 flowers with swollen and developed ovaries against 16 not swollen. Of this species he found several spikes of a delicate pink colour, and one pure white, also one spike in a peloriate condition, each flower having three perfect lips, the two petals being duplicates of the lip in length, breadth, colour and markings, but there was no spur to these additional lips. The pink flowers mentioned, Col. Godfery thinks, must be less attractive to bees than the purple, for he remarks that of fifteen spikes gathered only two had one flower and two had two flowers fertilised, whilst in them all only one had both pollinia removed, and one other flower one only. In the whole field he saw only one pure white Morio, which had not yet been visited. Incidentally he remarks, "I noticed at Pisa that pink varieties of the purple Orchis laxiflora were fairly numerous, but white ones were much rarer."

No hybrid between the two species was found, but the appearance of such a plant in Britain may be expected at any time, as it was met with in Germany as long ago as 1879, and has since been recorded as a native of Switzerland and France. It bears the name of Orchis morioides, Brand.

Col. Godfery's record of the abundance of Orchis mascula mixed with cowslips, in Dorset, recalls a locality at Clifton, Notts., where many years ago a similar condition of things was found, the Orchis being so common as to give a purple hue to a large meadow near the Rushcliffe Brook. Here also a beautiful pure white variety was found, which was transplanted and cultivated for many years. Mention of Pisa also recalls a railway journey from Florence to Pisa, in April, 1911, when the marshes by the side of the line were purple with an Orchis, of which we were unable to secure specimens. Col. Godfery may possibly know the species. R.A.R.

CYCNOCHES CHLOROCHILON.

THE annexed figure of a female flower of Cycnoches chlorochilon will be interesting in connection with the history of C. ventricosum, of which an account is given at pp. 189-191, and the character which at once strikes one is the short, stout column and the triangular column wings.

Fig. 25. CYCNOCHES CHLOROCHILON: FEMALE FLOWER.

In the male flowers, which are frequently seen in cultivation, the column is long and slender and the column wings are undeveloped. The perianth segments are very similar in the two sexes, except that in the female they are rather broader and more fleshy. In C. ventricosum the two sexes show about the same amount of difference (though both are rather smaller), which is very different from the great diversity between the sexes in C.

Egertonianum, of which photographic illustrations are given at p. 296 of our sixteenth volume, and it may be added that this is the condition of things which Bateman's artist ought to have represented. Whether the flowers were so much withered that they had to be restored by the help of an earlier drawing, or whether the short column was thought to be an abnormal condition, will probably never be known, for the flowers were, unfortunately, not preserved. Whatever the reason may have been, the fact remains that Bateman's plate shows the impossible condition of male flowers of two distinct species, and from two distinct sections of the genus, on the same pseudobulb, as may be seen by the reproduction of the plate given at page 297 of the volume just cited.

To return, however, to C. chlorochilon, it is curious that the species should have been known for upwards of half-a-century before the female flower was recorded. It was in July, 1891, that it made its appearance, in the collection of M. Houzeau de Lehaie, Hyon, Mons, Belgium, on a plant that had been imported from Caraccas. At first only a single female flower appeared, but shortly afterwards another plant produced both sexes. Somewhat later the female also appeared with Messrs. Sander, St. Albans, and at Kew, and it is the latter that is represented in the annexed figure. Except in the far shorter and stouter column, with its broad wings, and the much stouter ovary, the sexes are much alike, though in the female the segments are rather broader and more fleshy. The capsule is also reamrkable, one found on a plant imported by Messrs. Hugh Low & Co. being about six inches long by two inches broad, and containing nearly four million seeds (*O.R.*, xvi., p. 168). The species is a native of Venezuela, and was originally described by Klotzsch in 1838. R.A.R.

SOCIETIES.

A MEETING of the Royal Horticultural Society was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on August 13th, when there was a rather small display of Orchids, and the awards consisted of two Awards of Merit and two medals.

Orchid Committee present: Sir Harry J. Veitch (in the Chair), J. O'Brien (hon. sec.), W. Bolton, R. A. Rolfe, F. J. Hanbury, C. J. Lucas, Walter Cobb, Arthur Dye, W. H. Hatcher, J. Charlesworth, A. McBean, R. G. Thwaites, Stuart H. Low, F. K. Sander, and C. H. Curtis.

AWARDS OF MERIT.

CATTLEYA HESTA ALBA (C. Suzanne Hye de Crom × Warscewiczii Frau Melanie Beyrodt).—A charming albino, the flowers being pure white, with a light chrome yellow disc to the lip. Exhibited by Messrs. Charles-

worth & Co. Its appearance is interesting, for all the other seedlings of the batch have had a purple blotch of varying size on the front of the lip.

LÆLIOCATTLEYA APPAM (Lc. Scylla × C. Dowiana aurea).—A brilliantly-coloured hybrid, bearing a spike of three well-shaped flowers, the sepals and petals deep golden yellow, and the lip ruby purple, with some orange-coloured lines on the disc. Exhibited by Messrs. Charlesworth & Co.

GENERAL EXHIBITS.

Messrs. Charlesworth & Co., Haywards Heath, staged a choice group, to which a Silver Flora Medal was awarded. It contained several fine forms of Læliocattleya Appam, varying from light yellow to orange in the sepals and petals, and from rose-purple to claret in the lip, Lc. Serbia and Jocasta, Miltonia vexillaria and var. Queen Alexandra, Odontioda Madeline and Euterpe, Odontoglossum crispum xanthotes, O. Rolfæ, and others.

Messrs. Stuart Low & Co., Jarvisbrook, were awarded a Silver Flora Medal for a fine group, including many well-bloomed Cattleya Warscewiczii one of them bearing a spike of as many as eight fine blooms, some good C, Dowiana aurea and C. Gaskelliana, a fine Dendrobium chrysanthum, Maxillaria nigrescens, Læliocattleya Dominiana, and many others.

Messrs. Sanders, St. Albans, showed Cattleya Hardyana alba Marshal Foch, a charming thing, with pure white sepals and petals, and a ruby-crimson lip with two yellow blotches and some yellow veining on the disc.

At the meeting held on August 27th there was a fine display, and the awards consisted of one First-class Certificate, two Awards of Merit, one Certificate of Appreciation, and three Medals.

Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec.), C. J. Lucas, W. H. White, W. Bolton, Walter Cobb, J. Charlesworth, F. K. Sander, J. E. Shill, R. G. Thwaites, J. W. Potter, Sir Harry J. Veitch, C. H. Curtis, S. W. Flory, and R. A. Rolfe.

FIRST-CLASS CERTIFICATE.

CATTLEYA HARDYANA ALBA PRESIDENT WILSON (Dowiana aurea × Warscewiczii, white).—A magnificent variety, the sepals and petals being pure white and of excellent shape, and the lip crimson-purple, with yellow lines on the disc, and a pair of chrome yellow blotches in the throat. Exhibited by Messrs. Flory & Black, Slough.

AWARDS OF MERIT.

CATTLEYA ÆNEAS (Venus × Dowiana aurea).—A brilliant hybrid, most resembling C. Dowiana aurea, which is represented in it for the third time. It chiefly differs in having rather smaller petals, these and the sepals being bright yellow and the lip purple crimson, with golden yellow veining on the disc. Exhibited by Messrs. Charlesworth & Co.

CATTLEYA IRIS ANSALDO'S VAR. (bicolor × Dowiana).—A large and

handsome variety, having greenish yellow sepals and petals, a broad purple lip, with some yellow veining on the base of the rather broad isthmus, and a white column. Exhibited by J. Ansaldo, Esq., Rosebank, Mumbles.

CERTIFICATE OF APPRECIATION.

ODONTOGLOSSUM JOY (Uroskinneri × eximium).—A distinct hybrid, showing much of the Uroskinneri parent in the lip, which is white, with a few rosy spots near the front margin, and some purple blotches round the yellow crest, while the sepals and petals are heavily barred with purple on a whitish ground. Exhibited by C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan).

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver-gilt Flora Medal for a large and handsome group, including the beautiful Cattleya Warscewiczii Frau Melanie Beyrodt, with numerous well-flowered examples of the type, C. Dupreana, C. Loddigesii, Lælio-cattleya Dominiana, Lc. Sargon (Lc. Lustre × C. Hardyana), a large and handsome hybrid with rose-coloured sepals and petals and a crimson-purple lip, Brassocattleya Pluto, Hyeæ, and Ilene, Sophrocattleya Blackii and Doris, Sophrolælia Gratrixiæ, Brassocattleya Carmen (B. Digbyana × C. Madame Myra Peeters), a charming thing with blush-white sepals and petals, and a rosy tinge on the lip, a well-bloomed plant of the graceful Platyclinis filiformis, Oncidium oblongatum and cucullatum, Maxillaria luteoalba, the yellow Cypripedium Actæus Bianca, C. insigne Sanderæ, and other interesting things.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a fine group, including examples of Læliocattleya Appam, Serbia, Laura and Marina, Brassocattleya Maronii, Odontoglossum bictoniense album, O. crispum xanthotes and some good blotched hybrids, Cypripedium Massaianum and Cramore, with various other good things.

Messrs. Hassall & Co., Southgate, received a Silver Flora Medal for a showy group, including some beautiful examples of Cattleya Hardyana alba, C. Adula, C. Venus, C. Naidia (iridescens × Hardyana), C. Dowiana aurea, Brassocattleya Leemaniæ, Brassocattleya Muriel (Bc. Maroniæ × Lc. Feronia), of excellent shape, and the colour light rose with a greenish yellow disc to the lip, Læliocattleya Golden-Oriole, Cypripedium Ballantinei, C. Rossetti, and a few others.

At the meeting held on September 10th there was again a good display and the awards consisted of one First-class Certificate, one Award of Merit and two medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, F. J. Hanbury, W. Bolton, W. H. White, J. Charlesworth, C. H. Curtis, T. Armstrong, and F. K. Sander.

FIRST-CLASS CERTIFICATE.

LÆLIOCATTLEYA PRESIDENT WILSON (Lc. Thyone × C. Dowiana aurea).—A magnificent hybrid, most resembling the Cattleya parent in general character, the sepals and undulate petals being very broad, and bright yellow in colour, and the ample lip rich carmine-crimson, with orange-coloured veining throughout, the colour becoming rather lighter in front. This fine acquisition was exhibited by Messrs. Armstrong & Brown, Tunbridge Wells.

AWARD OF MERIT.

BRASSOCATTLEYA OLYMPUS LANGLEY VAR. (C. Hardyana × Bc. Maroniæ).—A handsome variety, having pale lilac sepals and petals, and a broad, well fringed lip of somewhat darker shade, with a large, clear yellow disc. Exhibited by Messrs. Flory & Black.

GENERAL EXHIBITS.

Messrs. Stuart Low & Co., Jarvisbrook, staged a large and brilliant group, to which a Silver-gilt Medal was awarded. It contained five fine plants of Vanda cœrulea, some good examples of Oncidium incurvum and varicosum, and a good series of Cattleyas and Læliocattleyas; noteworthy among them being C. Iris var. Buttercup, having bright yellow sepals and petals, and a purple lip, broadly margined with yellow in front, and C. Gaskelliana My Lady, bearing five white flowers with a mauve blotch on the front of the lip. Numerous other interesting plants were also included in this fine exhibit.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a choice group, including many attractive Odontoglossums, Læliocattleyas and others, noteworthy among them being a richly-coloured Lc. Appam. There were also some excellent home-raised Miltonia vexillaria, including var. Dulcies, bright magenta-rose with a crimson mask on the lip, and Marshal Foch, a light rose variety with an exceptionally broad lip.

Messrs. Armstrong & Brown, Tunbridge Wells, sent Cattleya Ella Orchidhurst var. (bicolor × Warscewiczii), a finely-shaped form with light salmon-rose sepals and petals, and a broad, violet-crimson lip.

Messrs. Flory & Black, Slough, showed a well-grown plant of Cattleya Warscewiczii Frau Melanie Beyrodt.

Messrs. J. & A. McBean, Cooksbridge, staged a small group, including a plant of the rare Rodriguezia secunda with four spikes of coral pink flowers, with good examples of Vanda Sanderiana, Cattleya Venus, C. Hardyana alba, and Brassocattleya Nodina.

At the meeting held on September 24th there was a good display of Orchids, and the awards consisted of two medals and two Awards of Merit.

Before commencing the business, the Chairman referred with sorrow to the death of Mr. Eric K. Davidson, a member of the Orchid Committee, who was killed in action in France on August 24th, and moved a Vote of Condolence with the family on their bereavement.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), F. J. Hanbury, R. A. Rolfe, J. W. Potter, Arthur Dye, W. J. Kaye, C. J. Lucas, Walter Cobb, S. W. Flory, W. H. Hatcher, J. Charlesworth, F. K. Sander, H. G. Alexander, E. R. Ashton, Pantia Ralli, J. Cypher, and J. E. Shill.

AWARDS OF MERIT.

CATTLEYA KING-VICTOR (Rhoda × Octave-Doiu).—A handsome hybrid, the flowers being excellent in shape, and the sepals and petals rosy mauve, freckled with cream, while the undulate lip is rich claret-crimson, with orange lines on the disc. It should develop into a fine thing. Exhibited by Messrs. Flory & Black, Slough.

LÆLIOCATTLEYA IVANHOE (C. Dowiana aurea × Lc. eximia).—A large and handsome hybrid, with bright rose-coloured sepals and petals, and a broad, undulate lip, deep ruby crimson in front and paler behind, with yellow veining on the disc. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

GENERAL EXHIBITS.

W. J. Kaye, Esq., Caraccas, Ditton Hill, Surbiton, showed a good form of Læliocattleya Bola (Lc. callistoglossa × C. labiata), with rose-coloured sepals and petals, and a dark purple-crimson lip with some yellow in the throat.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver-gilt Flora Medal for a large and handsome group, including some fine white and coloured Cattleya Hardyana raised in the establishment, C. Baron Delbeke (Pittiana × Dowiana aurea), C. Dowiana aurea, Minucia, and Goosensiana. some well-bloomed C. Warscewiczii and C. Loddigesii, one of the latter bearing a fine spike with twelve flowers, the handsome Lowiara insignis, some good Læliocattleya Dominiana, Brassocattleya Ilene and Leemaniæ, several well-bloomed Oncidium varicosum and incurvum, Vanda cœrulea. Odontoglossum grande, Cypripedium Rothschildianum, C. insigne Sanderæ, and some well-bloomed examples of the Orchis-like Stenoglottis longifolia.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a fine group, including several good forms of Cattleya Venus, C. Adula, Læliocattleya Carmencita var. gloriosa, bright yellow with dark maroon-crimson lip, Lc. St. George (Lc. St. Gothard × C. Fabia), with rose-purple flowers, Lc. Colmaniana, some good examples of Lc. Appam, Brassocattleya Sofrano (Bc. Leemaniæ × C. iridescens), with yellow sepals and petals and a darker throat to the lip, Brassocatlælia

Joiceyi (Bcl. Cooksonii × C. Rhoda), having orange-yellow sepals and petals and a rosy crimson fringed lip, Miltonia vexillaria Queen Alexandra and M. Bleuana, Odontoglossum crispum xanthotes and a few blotched hybrids, a fine plant of Cirrhopetalum ornatissimum with four scapes, a well-bloomed example of Bulbophyllum grandiflorum, and others.

Messrs. Armstrong & Brown, Tunbridge Wells, showed a good example of Læliocattleya Maqueda, Cattleya Loddigesii alba Stanley's var., C. Iris Orchidhurst var., C. Venus, and three good forms of Lc. Golden-Wren (C. iridescens × Lc. Thyone), of different shades of yellow with a purple front lobe to the lip.

Messrs. Flory & Black, Slough, sent a good form of Brassocattleya Olympia, having blush pink sepals and petals, and a white lip with yellow disc.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held at the Coal Exchange, Manchester, on July 18th, the members of Committee present were:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher. S. Davenport, J. Howes, D. McLeod, J. McNab, E. Rogers, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATE.

Cattleya Warscewiczii var. Mrs. E. Ashworth, from W. R. Lee, Esq.

AWARDS OF MERIT.

Cattleya Warscewiczii var. Boltonii, and Odontoglossum Circe (parentage unknown), from W. R. Lee, Esq.

Cypripedium Mrs. D. S. Brown, and Lycaste Chorltonii (natural hybrid) from S. Gratrix, Esq.

Cattleya Orange Gem (C. iridescens × C. triumphans), from P. Smith, Esq., Ashton-on-Mersey (gr. Mr. J. N. Kitchin).

Owing to the commencement of the holiday season the exhibits were very few in number, those not included in the above award list being as follows:—

W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), sent Odontoglossum Thais, Lælia Iona, Miltonia Bleuana, and M. Imperator.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), sent Cypripedium Dallas exquisitum, and a fine flower of Cattleya Warscewiczii Britain's Queen.

At the meeting held on September 5th (after the summer vacation) the members of Committee present were:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Evans, J. Howes, A. Keeling, D. McLeod, W. Shackleton, H. H. Smith, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATE.

Cattleya Thebes var. Queen Mary (Adula × Dowiana Rosita), from S. Gratrix, Esq.

AWARDS OF MERIT.

Sophrocatlælia Sax-Oriole (Sc. Saxa × Lc. Golden Oriole), from Mrs. Bruce and Miss Wrigley.

Cattleya Thebes var. magnifica, from S. Gratrix, Esq.

BOTANICAL CERTIFICATE.

Cycnoches ventricosum, from Mrs. Bruce and Miss Wrigley.

CULTURAL CERTIFICATE.

To Mr. E. Rogers, for Vanda cœrulea.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. E. Rogers), staged a group composed principally of Vanda cœrulea, to which a Silver-Gilt Medal was awarded (a Cultural Certificate and Silver Medal being also awarded to the gardener).

S. Gratrix, Esq., Whalley Grange (gr. Mr. J. Howes), sent Lycaste Bessie Brown.

Messrs. Keeling & Sons, Bradford, staged Cattleya Helen Langley, C. Iris, Cypripedium General Pershing, C. Gaston Bultel, and a fine C. Maudiæ magnificum.

At the meeting held on September 19th, the members of Committee present were:—Rev. J. Crombleholme (in the chair), Messrs. D. A. Cowan, J. C. Cowan, J. Cypher, S. W. Flory, J. Howes, A. Keeling, D. McLeod, W. Shackleton, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATE.

Cattleya Hardyana alba The Premier, and Læliocattleya fulva West Point var. (Lc. Golden Oriole × C. fulvescens), from S. Gratrix, Esq.

Læliocattleya luminosa aurea Heathfield var., from J. J. Bolton, Esq.

Læliocattleya Soulange var. Perfection (L.c. Lustre × C. Dowiana aurea), from Messrs. J. & A. McBean.

AWARDS OF MERIT.

Cattleya Empress Frederick alba West Point var., C. Prince John var. alba, and C. Hardyana alba var. Distinction, from S. Gratrix, Esq.

S. Gratrix, Esq., Whalley Grange (gr. Mr. J. Howes), was awarded a Large Silver Medal for a fine group, including Læliocattleya Invernia, Sophrocattleya Faboris Gratrix's var., Cypripedium Ernest Read, C. Our Queen, and others.

J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law), staged Cattleya Hardyana alba, and a few plants of Odontoglossum grande.

Messrs. Cypher & Sons, Cheltenham, were awarded a Silver Medal for a fine group, including Cypripedium Gaston Bultel, Rossetti, bingleyense,

Felicity, Sir Redvers Buller, and Lord Derby, Læliocattleya luminosa, and Lc. Lustre, Cattleya Hardyana, Brassocattleya Mariæ, Odontoglossum Uroskinneri album, and others.

Messrs. J. & A. McBean, Cooksbridge, staged Odontoglossum crispum xanthotes and O. eximium xanthotes.

Messrs. Sanders, St. Albans, staged Cattleya Lady Veitch, C. Iris, C. Adula vars., Cypripedium Mary Beatrice, Gaston Bultel, Germain Opoix, Pyrrha, Actæus Majestic, and Doritis pulcherrima.

Messrs. Hassall & Co., Southgate, staged Cattleya Judith (Hardyana × Rothschildiana), and a fine form of C. Hardyana alba.

THE FUEL QUESTION.

For the guidance and information of the members and others, the following particulars relative to the allowances of fuel for greenhouses and conservatories have been issued.

None in respect of a single greenhouse attached to a dwelling-house, unless there are exceptional circumstances.

Two-thirds of the average normal consumption in respect of Vineries, Peach-houses, and houses permanently planted.

Three-quarters of the average normal consumption in respect of Orchid-houses, Tropical houses, &c., which contain plants of exceptional value or variety, or which are used for scientific purposes.

One-half of the average normal consumption for ordinary ranges of greenhouses, conditional on their being used for growing of vegetables, or for forcing food plants for bedding out or other utilitarian purposes.

NOTES FROM KEW.—IX.-X.

IN our May Notes we gave a brief account of some of the miniature Orchids that are grown at Kew; at the other end of the scale we find a few giants of the family that have flowered in the collection, and first we may mention the plant of Grammatophyllum speciosum, which has been for so long one of the features of the Victoria house. This gigantic clump, as it was originally, was obtained by Messrs. Sander from Penang, and was intended for the Chicago Exhibition in 1893, but meeting with an accident was presented to Kew instead. Some eight years later, in the autumn of 1901, it made an unsuccessful attempt to bloom, but the two spikes never fully developed, possibly because of the lateness of the season. In the summer of 1907, however, three fine spikes were produced, some seven feet high, with a profusion of its large yellow and brown spotted flowers, and

formed for several weeks a great centre of attraction. Some idea may be formed of the dimensions which this species attains under favourable circumstances by the records that a plant at Buitenzorg produced about fifty spikes, weighing in the aggregate nearly a hundredweight, and that another which was brought from Malacca to Singapore weighed, with the portion of the tree on which it grew, three-quarters of a ton. The Kew plant, though now considerably reduced in size, is quite healthy, and will doubtless bloom again in due course. In the tropics it is said to flower annually.

Another giant is Lissochilus Mahonii, a native of Uganda, which flowered at Kew in 1905, and was figured at t. 8047 of the *Botanical Magazine*. It bears a general resemblance to L. giganteus, which has bloomed in several European collections, but differs in the colour of the flowers. The spike is about eight feet high, and bears some three dozen flowers, with large lilac-purple petals, and a green and purple lip, with yellow keels in the centre. These big Lissochili are not easy to cultivate, and the plant was subsequently lost. For the history of L. giganteus, see *O.R.*, v. pp. 295-6.

Eulophiella Peetersiana is a large and striking species, which occasionally blooms in the collection, its tall spikes of deep rose-purple flowers and long recurving leaves giving it an imposing appearance, though like other giants it requires rather a lot of room to do it justice. It is a native of Madagascar, and its history and a figure are given at pp. 138-140 of our twentieth volume.

Other giants include Stauropsis gigantea and S. Imthurnii, both of which have flowered during the present year, and have already been dealt with, the history of tha latter being given at p. 167. And we must not omit Sobralia Cattleya, which has long been grown here, though the hope of ever flowering it seems to have long ago been abandoned. The history seems to be the same wherever the plant is grown, unless an exception may be made of the Burford plant, which is said to have once produced an imperfect spike.

The Cattleyas and allies have for some weeks been making a great display, the hybrids of C. labiata, Dowiana, and Bowringiana being well to the front, with good examples of the parents for comparison. The hybrids of C. Bowringiana retain much of the vigour and floriferousness of this parent, and both C. Mantinii and C. Browniæ have been very effective. C. Wendlandiana, the hybrid between C. Warscewiczii and Bowringiana is a large plant which has produced several spikes of its bright purple flowers. Læliocattleya Tiresias, the hybrid between Lc. elegans and C. Bowringiana, is another very strong plant that has bloomed freely, and makes a very effective specimen. It was also interesting to see plants of the very distinct

Lælia Perrinii, and Læliocattleya Decia, its hybrid with C. Dowiana. One might enumerate quite a long list of flowering plants of this decorative group.

The autumn-blooming Pleiones are again making a fine display, particularly P. maculata and P. lagenania, but there also several pans of P. Wallichiana and præcox, while the plant of P. præcox alba—the only one that we know of—has again produced two of its chaste white flowers. Near by, the Madagascar Cynorchis purpurascens is flowering well, and there are plants of Catasetum maculatum, the dark purple Liparis macrantha, and the curious Oberonia cylindrica and O. myriantha, with equitant leaves and dense spikes of minute buff-yellow flowers. A little group of Epidendrum vitellinum supplies a bright patch of colour.

The autumn blooming Cypripediums are now making an attractive display, and include the distinct C. Fairrieanum and several of its hybrids, the bright yellow C. villosum aureum, C. venustum, several forms of C. insigne, and numerous hybrids derived from these and other species. One particularly beautiful yellow is seen in C. Actæus var. The Queen, a decided improvement in colour on C. insigne Sanderæ, of which a good example bearing several flowers stands beside it. Two good plants of C. triumphans are also noteworthy. In this house is a fine group of Doritis pulcherrima, which lasts long in perfection, also a plant of the rare Arachnanthe Clarkei with three flowers.

The Brazilian Miltonias have made a good display, plants of M. candida, Clowesii, and Regnellii having bloomed well, with examples of the natural hybrids that are in the collection. There are also a few Masdevallias and allies, with species and hybrids of the Odontoglossum group, but this is a rather quiet season in the Cool house.

PHAIUS GRANDIFOLIUS IN PANAMA.

IT has long been known that the Chinese Phaius grandifolius is common in Jamaica as a naturalised plant, and now we have evidence of its occurrence in Panama. Mr. C. W. Powell, Balboa, Canal Zone, sends photographs and dried flowers of an Orchid, which he thinks must be a Phaius, and which he obtained under the following circumstances. It was purchased some two years ago from a local greenhouse, the proprietors of which keep up a supply of 'lilies' and ferns by sending their coloured workers into the jungle and hillsides to collect them. Mr. Powell occasionally visits the place in search of novelties, and on seeing this plant, which was called a lily, he purchased it, thinking from the general appearance it must be an Orchid. All that was known about it was that it

had been brought in from the woods with a lot of miscellaneous lilies and ferns, and the exact locality could not be given. It was a small plant and did not flower that year, but last spring it looked so flourishing that it was divided. It has now produced a spike of seven flowers, and Mr. Powell sends three photographs, with the dried flowers, which prove to be those of P. grandifolius, Lour. In view of what has happened in Jamaica (which is mentioned below), it will be interesting if Mr. Powell can ascertain how far the species has established itself in Panama.

The photographs show the entire plant, much reduced, and the spike on a larger scale. The spike is somewhat abbreviated, and, curiously enough, only one of the flowers sent is normal. Another has one petal missing, the other being reduced in size, curved, and united to the column at the base; a third has both petals missing, and a fourth consists of the lateral sepals and lip only. Two other flowers are sent, to show the column, and from these the petals are missing, and the lip has apparently been cut off just above the spur. It will be curious to see if future spikes regain their normal condition.

Its presence in Jamaica as a naturalised species can be traced back at least to 1864, when Grisebach recorded it as found by two different collectors, adding "rare;" and in the recently published *Flora of Jamaica*, Fawcett and Rendle remark that it is completely naturalised and common in damp places in some parts of Jamaica, flowering throughout the year. Seven localities are enumerated, and specimens from four of them are preserved at Kew. We may also recall Dr. Shafer's account in our own pages (*O.R.*, xx. p. 77), that it has become completely naturalised there, and is now found in almost every part of the island. It also occurs in Cuba, and there is a specimen collected in marshes at Santa Anna, by Eggers, in 1889. The circumstances of its introduction to Jamaica are, we believe, not known, but it is believed to have been an escape from some garden, and its present abundance and wide diffusion are believed to be due to the facility with which the seeds are disseminated by wind, and to the freedom with which they germinate. The climate and soil are evidently suitable, and Mr. H. N. Ridley has informed us that during a recent visit he found it so abundant that it could be gathered by the armful. Its beauty as a garden plant is well known, and one can readily imagine the effect of seeing it under the conditions above described. R.A.R.

GERMINATION OF BLETILLA HYACINTHINA.—Of Orchid seeds, that of Bletilla hyacinthina is certainly the most easy to raise. Is this because the species is independent of the fungus known as Rhizoctonia? This was the opinion of M. Noel Bernard. If seeds are sown in pots of suitable compost and suspended near the roof glass, the seeds germinate well, and the seedlings flower at about one and a half or two and a half years old. If one of

your readers cares to try, I will send him a few seeds. Besides the type, I cultivate a variety with pure white flowers, which reproduces itself true, and I have another in which the leaves are margined with white. I have not ascertained if the latter reproduces itself true, or if it reverts to the type, as seems the more probable. Here the Bletillas are nearly hardy. Grown in ordinary soil, and protected from north winds by a wall, they resist all but the severest winters, though it is preferable to give them some protection. The soil in which they succeed best contains a plentiful admixture of leaf mould.

FERNAND DENIS.

Balaruc-les-Bains, Herault, France.

CATTLEYA INTRICATA.

AN interesting Cattleya has flowered in the collection of J. Ansaldo, Esq., Rosebank, Mumbles, which we refer to C. intricata, Rchb. f., the natural hybrid between C. intermedia and C. Leopoldii. This hybrid originally appeared with Messrs. Hugh Low & Co., at Clapton, in 1884 when it was suggested as a probable natural hybrid between C. intermedia and Lælia elegans. The unique plant then passed into the collection of H. Little, Esq., Twickenham, and in 1889 complete materials were deposited at Kew. A careful comparison then showed that the plant was intermediate between C. intermedia and C. Leopoldii, and as the pollinia were those of a pure Cattleya it was evident that this represented the parentage. A variety maculata subsequently appeared in the collection of Malcolm Cooke, Esq., Kingston Hill, in which the influence of C. Leopoldii was more apparent, in the much spotted petals. The parentage was confirmed when Messrs. Sander raised a similar plant from the same two species, which was called C. Rossii before its identity with C. intricata was discovered.

It is interesting to note that the three Santa Catherina species, C. intermedia, C. Leopoldii, and Lælia purpurata, have yielded all the three possible natural hybrids, and that the parentage in each case has been proved experimentally. These are Læliocattleya elegans (C. Leopoldii × L. purpurata), Lc. Schilleriana (C. intermedia × L. purpurata, and C. intricata (C. intermedia × Leopoldii). What has not been cleared up is whether any of the possible secondary hybrids also exist in a wild state. Two of them have been described with a great deal of confidence, by "Argutus" (*Gard.*, 1902, ii. p. 182), namely Læliocattleya Pnillip-Stokes (Lc. elegans × C. Leopoldii), and Lc. Queen-Alexandra (Lc. Schilleriana × L. purpurata). Under the heading of "Two new natural hybrids?" the writer remarks:—

"The wonder is, considering the length of time that Læliocattleya

elegans, Schilleriana, and Lælia purpurata have been imported and cultivated, that the presence of this and the preceding hybrid have not previously been known or suspected, as it is quite reasonable to suppose that as we have natural hybrids between Cattleya Leopoldii, Lælia purpurata, and Cattleya intermedia, those hybrids must in some cases, and as the two undermentioned now prove, have crossed between themselves and with the parent species. There can be no doubt as to the correctness of the parents ascribed, as fortunately flowers of the true Lc. Schilleriana were at hand for comparison."

We are not equally confident. Nothing further seems to be known about the plants, no specimens appear to have been preserved, and no mention of them can be found in Boyle's account of the Woodlands collection, where several pages are devoted to the group. The records may, of course, be correct, and other of the twelve possible secondary hybrids may be included among the numerous named varieties of Lc. elegans and Lc. Schilleriana, but in the absence of specimens, and in view of the known behaviour of secondary hybrids generally, we cannot regard the evidence as convincing. One or two experiments might throw further light on the matter. R.A.R.

ORCHID DRYING IN THE TROPICS.—Several well-dried flowers are sent by two esteemed correspondents. Some of them have been folded in pieces of blotting paper, and are well preserved and without mould. Others appear to have been pressed under a hot iron, and the pollinia are missing or crushed beyond recognition, so that in one or two cases the genus remains uncertain. The former method is preferable, because the materials are more easily examined afterwards. Some of the flowers are gummed to thin cards, and it is remarked that flowers curl up under the process, and some were thrown away. Mounting might be limited to the specimens retained, and for this loose sheets of uniform size are the best, so that additions and rearrangements can be made as desired. For these the use of a corrosive sublimate solution as a preservative against insects is important. Fairly complete materials should be dried, so that any novelties can be properly described. Some of the specimens are accompanied by photographs, or outline sketches in pencil, natural size, with notes on the colour of the flowers, and these are excellent. Duplicates are being kept, with corresponding numbers, so that the names can be added when reported. Sending by post will probably be less difficult in the near future. As regards the question of drying leaves and pseudobulbs, it will be found that a little of the corrosive sublimate solution applied with a brush will kill the protoplasm, after which they will dry quickly. Some things change colour in drying, but this does not impair their value.

OBITUARY.

ERIC H. L. DAVIDSON.—We regret to learn that Mr. E. H. L. Davidson, chief partner of the firm of Messrs. E. H. Davidson & Co., Orchid Nurseries, Twyford, Bucks., was killed in action in France on August 27th last. Mr. Davidson, who has been a member of the R.H.S. Orchid Committee since the spring of 1914, and who joined the Artists' Rifles at the commencement of the War, will be remembered as a frequent exhibitor, and the donor of the Davidson cup which was awarded for Cattleyas at the R.H. S. Summer Shows in 1913-15.

ORCHIDS OF THE MALAY PENINSULA.—Some idea of the diverse conditions under which Orchids occur may be gathered from an account, by Mr. H. N. Ridley, of the Orchids of the Malay Peninsula, which is here summarised :—

The greater part of the Malay Peninsula is covered with dense jungle, which extends to the tops of nearly all the hills, though the trees at about 4,000 feet are more stunted. In the low country forests epiphytic Orchids are comparatively rare, and when they occur are usually situated on the upper branches of the loftiest trees, so as to be nearly inaccessible. Terrestrial Orchids, chiefly Neottieæ, some of which are saprophytic, occur scattered all through the forests, usually sparingly, and owing to their dull or brown colouring are often very inconspicuous. The mangrove swamps and tidal river banks are often very rich in epiphytic species, which sometimes thickly cover the branches of the trees.

In the drier and more sunny spots along the sea coast, and the more open rivers, species of the Aërides group scramble over the rocks in thick masses. The open country where the forests have disappeared produce but few species, but various terrestrial species occur in dry, grassy spots, and others grow in grassy swamps, including the handsome Vanda Hookeriana. A few common species are abundant in the orchards and gardens of the villages. In many of the hill forests Orchids become more abundant as one ascends, and on exposed rocky slopes, where the jungle has become more open, a great variety can often be found, including certain species that in the low country inhabit the loftiest trees, but here occur on the ground or low down on the stems and branches of bushes and small trees.

On Kedah Peak, at about 3,000 feet elevation. the ground in some places is thickly covered with plants of Bulbophyllum, Cœlogyne, Dendrobium, Platyclinis, Eria. &c., in such a manner that one is up to one's waist in them. A very different Orchid flora is that of the limestone hills, which

are scattered about all over the peninsula, the plants growing both on the weathered pinnacles of rock and on the small trees and shrubs growing in the crevices of the rock.

ORCHID NOTES AND NEWS.

MEETINGS of the Royal Horticultural Society, at the London Scottish Drill Hall, Buckingham Gate, Westminster, are fixed for September 10th, 24th, and October 22nd. The meeting on October 8th is restricted to British Grown Fruits. The Orchid Committee meets at 11.45 a.m. The dates of the three remaining meetings of the year are November 5th, 19th, and December 3rd.

The dates of the meetings of the Manchester and North of England Orchid Society are September 5th, 19th, October 3rd, and 17th. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m. The dates of the remaining meetings of the year are November 7th, 21st, and December 19th.

ROLL OF HONOUR.—We regret to learn that Pte. C. W. C. Young, eldest son of Mr. W. H. Young, late of Clare Lawn, East Sheen, and now in charge of the Orchid collection at Warren House, Stanmore, was killed in action on September 2nd, before reaching his 21st birthday. He joined the Civil Service Rifles in May, 1915, and had seen over two years' service in France.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

E.R.—The name Cycnoches ventricosum is quite correct, as you will see by a note on another page.

C.W.P.—The flowers are duly to hand, and will be reported on shortly. The Glossary of Botanic Terms, by Dr. B. D. Jackson, Duckworth & Co., Philadelphia, should answer the purpose.

C.H.L.—Two or three of the names are at present uncertain, but we will report shortly. A dried flower of the subjects photographed would probably enable the names to be given. A note is held over.

Photograph received, with thanks.—A. McB.

W.W.—One of the seedlings of what is called Odontoglossum crispum Black Prince, which clearly has some O. Hunnewellianum in its composition. We believe the other parent was a form of O. crispum.

G.J.—Many thanks. The note will appear in our next issue.

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VOL. XXVI. NOVEMBER—DECEMBER, 1918. No. 311-312

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVI. NOVEMBER-DECEMBER, 1918. NO. 311-312.

OUR NOTE BOOK.

WE were on the tip-toe of expectation—things had been happening, and the moment of crisis had arrived. A sudden reverberation, and people burst into the street. It was the signal of the failure of a great military autocracy, which had enslaved a nation and sought to dominate the world, and an announcement of a return to sanity. It meant that civilisation had been saved, and that henceforward the development of the peaceful arts would again be possible. The houses were soon gay with flags and bunting, the streets filled with a joyous crowd, and the air was pulsating with electricity. A sedate Orchidist is said to have thrown up his hat; we are charged to announce the fact, and we see no reason for witholding it, for with the shortage of labour and the abnormal conditions generally it has been difficult to "carry on," however strong the conviction that the fruits of so much activity in the past must not be lost. And they have succeeded, though the fuel difficulty remains for the present, and it will be some time before normal conditions return. And then we anticipate that progress will again be rapid. It now remains to secure the world from a similar, indeed a worse catastrophe, and we hope that Orchidists everywhere will accord to the idea of a League of Nations their cordial sympathy and active support.

Many fears have been expressed as to the safety of Orchid collections in the area devastated by the war; our readers will remember the account of the destruction of M. Alfred de Gentil's collection of Anœctochili during the bombardment of Arras (*O.R.*, xxiii. p. 128), and we are the more pleased to learn that the Orchids at Messrs. Sander & fils fine establishment at Bruges are to a great extent safe. Details will be found on another page, and next month we hope to hear of other Belgian collections from which we have been cut off for years. Last April would have seen another great Quinquennial Show at Ghent but for the tragedy of the war. Is it too much to hope that something may be done to remedy the deficiency before another quinquennial period comes round?

It is too early to estimate the disastrous effects of the war upon Orchidology; we are too near the great tragedy, but the withdrawal of labour from peaceful occupations, the difficulties of transit, shortage of materials, and restrictions on travel have all had their influence. And until peace is signed many of the restrictions are likely to continue, and even then the return to normal conditions will not take place all at once. How soon the Royal Horticultural Hall will again be available we do not know, and it is perhaps too much to expect that the great summer shows can be resumed next year. But in any case the fortnightly meetings are likely to regain some of their old importance, and when the big Shows are resumed we shall doubtless again see displays that are worthy of the occasion.

Shall we ever see a return of the former conditions of Orchid importing? asks a correspondent. Perhaps not, now that so many brilliant hybrids are being raised at home. But the latter, after all, belong to a comparatively limited class, and we think there is still room for a selection of the numerous remarkable genera which are as yet untouched by the hybridist. This, in fact, is the cause of complaint, that there are now so few opportunities of picking up those interesting little plants that were constantly appearing in importations, and whose flowering for the first time was awaited with as much curiosity as is that of the modern race of hybrids, and which afterwards gave as much pleasure in their cultivation. Many, we know, are still grown, and with a return to normal conditions an opportunity for importing others will again present itself, if there is the necessary demand for them. And the increasing amount of Orchid culture in the tropics, with the improved facilities for transit that may be anticipated, will doubtless bring some of these interesting plants within reach again. Some might be sent by post direct, under a suitable method of packing, and when the plants are at rest. Perhaps we shall hear more of this in the near future.

An importation of Cycnoches from Central America for example, would be interesting, if it yielded such surprises as those described by Bateman, of which a summary is given at pp. 189-191. Even if the element of surprise were now lacking, it would enable one better to realise some of the conditions of the past. In any case the sight of such utterly diverse kinds of flowers on the same plant is one to be remembered, and is very likely to occur on strong imported plants. There is also the fact that in several cases only one sex is at present known. It is not a little curious that so comparatively little should still be known of this remarkable genus. And the remark applies with equal force to Catasetum, a much larger, allied genus, in which the sexes are so diverse in character that they were formerly placed in separate genera.

OBITUARY.

WILLIAM PARKER BURKINSHAW.—We regret to announce that W. P. Burkinshaw, Esq., J.P., passed away at his residence, The West Hill, Hessle, E. Yorks., on Sunday, September 30th, in his 83rd year. Mr. Burkinshaw was a very old and enthusiastic Orchidist, his collection dating back to 1894, and during the whole of this time it has been under the charge of Mr. J. T. Barker, who is well known as the writer of our Calendar of Operations. Of a quiet and unassuming disposition, Mr. Burkinshaw had the reputation of being one of the best business men in the East Riding of Yorkshire, and his Orchid collection formed his chief relaxation. Albino Cattleyas and other white flowers were among his especial favourites, but the collection was quite representative. He was also a highly successful exhibitor at the York Galas, having been awarded 99 prizes at these meetings, of which 53 were firsts. Plants have also occasionally been exhibited in London, among which we recall Cattleya Warscewiczii White Queen and C. granulosa Hessle var., which received Awards of Merit from the R.H.S. in August and September, 1902. Nine houses were devoted to Orchids, and the general character of the collection may be seen in an account that appeared at pp. 138-142 of our nineteenth volume. It was on account of Mr. Burkinshaw's age and failing health that the collection was sold in June last, his illness dating from some weeks previous. Our correspondence with Mr. Burkinshaw dates from almost the commencement of the *Orchid Review*, in which he took the greatest interest, and we always found him the most loyal of friends. Never a year passed without some communication from him, though flowers were only sent on comparatively rare occasions. Mr. Barker found him a generous and considerate employer, and he was highly respected and honoured by all who knew him, and there was a large attendance at his funeral, which took place at Hessle Church on October 3rd. Mr. Burkinshaw leaves a son and two married daughters, a younger son having died a few years ago.

A NOVEL COMPETITION.—We have just dropped across a record of a somewhat novel competition that took place in 1867. The *Gardeners' Chronicle* at that time remarked (p. 488): "We understand that there are five competitors for the prize that Mr. Bateman offered to give for the most complete list of Cultivated Orchids arranged according to Temperature. The name of the winner is to be declared at the next Tuesday meeting (May 21) at South Kensington." The result was thus reported: "Mr. Bateman announced that Mr. Anderson, of Meadow Bank, near Glasgow, was the

successful competitor for the best list of Orchids arranged according to climate, winning by about 20 marks, and that Mr. Wentworth Buller was second. There were five competitors, and some of the lists contained some 1200 or 1300 names of Orchids that are or have been in cultivation."

SANDER & FILS, ST. ANDRE, BRUGES.

CONSIDERABLE anxiety has long been felt as to the safety of the numerous Orchid collections in Belgium. The following letter has been received from Messrs. Sanders, St. Albans, and we sincerely hope that the damage will prove to have been less than was at one time feared. We also hope to have news of other collections in the liberated area.

After just four years, we have received for the first time direct news from our manager, Mr. T. Mellstrom, who has been looking after our establishment at St. André, adjoining Bruges, in Belgium. During those four years we had an occasional indirect message from him, but never a direct communication.

He writes that he is well, and that he has been able to save some plants. Unfortunately, however, the head clerk was killed the very day before the entry of the relieving Belgian Troops. Very considerable damage has been done, especially in the form of broken glass, but that any should be left is remarkable in view of the fact that the Belgian Front Line for a time passed right through the Commune of St. André, just outside Bruges.

We do not know and can only hope to save part of the vast stock of Orchids which—being expelled by the German Commander—we had to leave there in 1914. We can scarcely hope that many of the 60,000 Cattleya hybrids, most of which should now have been of flowering size, can have been kept alive, but we do hope that some of the equally large quantity of Odontoglossum seedlings may be saved, as they would require much less fuel than the warmer Cattleyas.

We are glad to hear that the beautiful old town of Bruges itself has escaped with practically no damage to the various monuments, although the outlying parts adjacent to the docks and other places of military importance have been smashed up.

For a time after the outbreak of war, by permission of the Government, we were able to export a certain quantity of plants, but soon all communication became impossible, and hence it is with the greatest relief we hear that there is something of the Nursery left, which for all we knew to the contrary might have disappeared from the face of the earth, as has been the case with some nurseries nearer the old front lines. We hope such fate will be spared to the many establishments in and around Ghent.

NATURAL HYBRID ORCHIDS.

WHEN, in 1853, Lindley described Phalænopsis intermedia (*Paxt. Fl. Gard.*, iii. p. 163, fig. 310), he remarked:—"It is not improbable that this beautiful plant is a natural mule between P. amabilis and P. rosea. It agrees with the former in foliage and in the tendrils of the lip; with the latter in colour, in the acuteness of its petals, and in the peculiar form of the middle lobe of the lip. . . Flowers half way in size between P. amabilis and P. rosea." In an article written some years ago we remarked that this appeared to be the earliest recorded tropical natural hybrid Orchid, but that in place of P. amabilis we must now write P. Aphrodite, and we added that it was not a little curious that so shrewd a remark should have been made before a single artificial hybrid was in existence, and at a time when Dominy was only making his earliest experiments. We subsequently discovered the source of the inspiration, which was set forth in an able article in the *Gardeners' Chronicle* (1852, pp. 803, 804), some months before Phalænopsis intermedia was described. The writer, of course, was Dr. Lindley, and part of it is here given :—

"Do Orchidaceous plants produce hybrids? is a question often asked, and never answered satisfactorily. It is *probable* that they do, because their natural powers are identical with those of other plants; and there is no apparent reason why the ability given to Lilies, Amaryllids, and Irids, should be denied to Orchids. There is also a strong *presumption* that the difficulties attending a precise definition of certain supposed species in such Orchidaceous genera as Maxillaria, Orchis, Ophrys, Oncidium, Epidendrum, Dendrobium, &c., are connected with the occasional production naturally of intermediate forms of hybrid origin. But *proof* was, till lately, wanting. Mr. Röper had indeed pointed out a presumed mule between Orchis fusca and O. militaris; and similar evidence regarding Ophrys was obtained by Mutel. It is, however, to Mr. Weddell that is due the direct proof of the occurrence of mule Orchids in nature.

"It appears from an article in the *Annales des Sciences*, vol. xviii., that for 11 years past the pupils who attend M. de Jussieu's herborisations in the Forest of Fontainebleu, have remarked a plant wholly intermediate between the Man Orchis (Aceras anthropophora) and the Military Orchis. Mr. Weddell first remarked it in the year 1841, and a good many specimens were observed last summer among the coppice. In the same place only the two other Orchises were found between which this must be a hybrid, as is shown, we think conclusively, by one of Riocreux's charming figures which accompanies Mr. Weddell's memoir. The spike of the mule was more

oblong than in the Military, and less lax than in the Man Orchis. The sepals were bordered with red, as in the latter, but white with a few speckles, and turned upwards as in the former. The lip was just intermediate in form between the two, but purple and speckled as in the Military Orchis; and, finally, its spur was four times shorter than in that species, but, nevertheless, distinctly formed, instead of being absent, as in the Man Orchis.

"Here, then is a clear case of hybridism. The coppice contains A and B, natural well-known species, and no other; but among them springs up an intermediate form, which is equally A + B and B + A.

"In this, as in so many other cases, it is to be hoped that botanists will find cause to make them distrust the trifling peculiarities—we should rather say accidents—out of which some of them are perpetually fabricating those spurious species which we should be contented with describing as so many ephemeral examples of mistaken ingenuity, if they were not something far more important in their bearing upon the interests of natural history. . . Let us hope that Mr. Weddell's anthropophoro-militaris Orchis will assist in putting an end to so mischievous a folly."

The article is not cited for its historical accuracy—in which, indeed, it is rather defective—but to show how little was known of the subject prior to Dominy's initial experiments. It is quite evident that Weddell's memoir made a deep impression on Lindley, and inspired his shrewd inference as to the origin of Phalænopsis intermedia—an inference confirmed over thirty years later, when Seden raised an identical plant in Messrs. Veitch's establishment at Chelsea, by crossing Phalænopsis rosea with the pollen of P. Aphrodite. The seedling flowered in 1886, and thus P. intermedia possesses a double interest, for not only was it the first recognised tropical hybrid Orchid, but it was the subject of the first successful experiment to prove the origin of a wild plant.

Lindley's reference to M. Röper having pointed out a presumed mule between Orchis fusca and O. militaris should have been to an abnormal hexandrous form of the plant; the hybrid itself dates from at least twenty years earlier, it having been described by the elder Reichenbach in 1830-2 (*Fl. Germ. Excurs.*, p. 125), under the name of Orchis hybrida, Bœnn., with the significant remark, "Forsan hybrida species?"

And as long previously as 1787 we find an Orchis suaveolens described and figured as a hybrid by Villars (*Hist. Pl. Dauph.*, ii. p. 38, t. 1). The author remarked that if it were possible to think of a hybrid, especially in a genus which is multiplied very rarely by seed, it would appear that its parents might be Orchis odoratissima and Satyrium nigrum, but it might be only a variety. He then compared it with the suggested parents, and remarked that it was rare, having only been once met with during fifteen years herborisations near Grenoble. It is the earliest suggestion of a

natural hybrid Orchid that we know of. The plant was subsequently noted by De Candolle, and was successively called Gymnadenia suaveolens, Rchb., Nigritella suaveolens, Koch, and N. fragrans, Lindl., but it is significant that these authors omitted all references to its suggested hybrid origin. It may be added that the modern names of the suggested parents are Nigritella angustifolia and Gymnadenia odoratissima, but it is now recognised that G. Conopsea was the second parent. The hybrid is now known as Gymnigritella suaveolens, Camus, and Kerner remarks that is so common in the Central Alps, for instance in the Pusterthal of Tyrol, that hundreds of specimens are sometimes encountered in a single meadow.

Lindley's remarks have proved prophetic as to most of the genera mentioned, but it is curious that he should have overlooked or ignored the suggested hybrid origin of Orchis suaveolens. This was the plant on which he had previously based his Nigritella fragrans (*Gen. & Sp. Orch.*, p. 281), and his remarks lead one to infer that he had seen the book, and therefore the suggested origin of the plant. If he obtained the information second hand it might explain the omission, for earlier authors had made the same omission, which is perhaps explained by the scepticism then current as to the existence of hybrids. This article probably formed the turning point, and the flood of light soon afterwards thrown upon the subject by Dominy's classical experiments made further progress possible. To-day the question is the precise signifiance of hybridism as a factor in the origin of species.

ODONTOGLOSSUM EXIMIUM XANTHOTES: A CURIOUS GROWTH.—A small propagated plant of Odontoglossum eximium xanthotes sent by Messrs. Charlesworth & Co., Haywards Heath, shows a very curious growth, the further development of which Mr. Charlesworth hopes we shall be able to watch. Its essential character is that all four of the developing leaves and sheaths have a membranaceous, semitransparent, very undulate margin, as much as a fifth of an inch broad in places, which is entirely without chlorophyll. It extends all round the margin of the two sheaths and the inner leaf, but is limited to the base of the remaining one. Its precise significance is a little difficult to judge; it is not variegation, because only the epidermis is developed, though it may be due to malnutrition, the young growth developing before the new roots were able to supply it with the necessary food. The idea it is borne out by the absence of any such development from the older growth, and that it is a propagated piece, not an unflowered seedling. The abnormality is very conspicuous in this stage, and neither Mr. Charlesworth nor ourselves remember to have noticed a similar development before. The future behaviour of the plant will be watched with interest.—R.A.R.

NEW ORCHIDS.

A FORTY-SIXTH Decade of New Orchids, described by Mr. Rolfe, appears in the current issue of the *Kew Bulletin*, five of them being in cultivation. They are as follows :—

PLEUROTHALLIS GRANDIS, Rolfe.—A large and very distinct species of the Macrophyllæ Racemosæ group, which flowered at Kew in September, 1917, and again a year later. It is a native of Costa Rica, and was sent to Kew by Mr. C. H. Lankester. It is a large species, with cordate leaves, and the flowers are borne in a one-sided raceme, the colour being green, more or less suffused and striped on the sepals with brownish red.—*Kew Bulletin*, 1918, p. 234.

BULBOPHYLLUM ROBUSTUM, Rolfe.—A Madagascar species, which was received from the Royal Botanic Gardens, Glasnevin, in 1914, without a name, and flowered at Kew in May, 1917. It is near B. crenulatum, Rolfe, (*Bot. Mag.*, t. 8000), and the green and brown, very fleshy flowers are borne in a dense spike, with the lip sunk in a cavity formed by the united lateral sepals.—p. 234.

MAXILLARIA PARVILABIA, Rolfe.—Flowered in the establishment of Messrs. Sanders, St. Albans, in May, 1917. It is allied to the Brazilian M. lencaimaita, Rodr., and has light yellow flowers, tinged with pink on the sepals and petals, and the lip with some brown markings and a yellow crest. It is believed to have been imported from Peru.—p. 235.

LISTROSTACHYS FLORIBUNDA, Rolfe.—Sent from the Department of Agriculture, Uganda, in 1916, and flowered at Kew in September of the following year. It is a dwarf plant, with linear-oblong, shortly bidentate leaves, and spikes of white flowers, tinged with buff on the elongated slender spurs.—p. 236.

HABENARIA HUNTERI, Rolfe.—Sent to Kew by Mr. T. Hunter, Senior Curator of the Gold Coast Botanical Department, in 1915, and flowered in the collection in August, 1917. The flowers are white with green stigmas, and they bear a strong general resemblance to those of H. Susannæ, R. Br. —p. 238.

The species not in cultivation are, Chrysocycnis Lehmannii, Rolfe, collected on the Tunguaragua Volcano, Ecuador, by Consul Lehmann; Vanilla Havilandii, Rolfe, a Bornean species collected by Dr. Haviland; V. andamanica, Rolfe, collected in the Andaman Islands by Mr. C. E. Parkinson; Peristylus ugandensis, Rolfe, collected on the bushy highlands of Uganda by Scheffler; and P. Snowdenii, Rolfe, collected in short grass land at Lamaru, British East Africa, by Mr. J. D. Snowden.

ODONTOGLOSSUM EXIMIUM LA PAPILLON.

THE annexed figure represents the brilliant Odontoglossum eximium La Papillon, for which Messrs. J. & A. McBean received a First-class Certificate at the R.H.S. meeting held on October 22nd last, as recorded at page 249. It is a flower of model shape, being nearly circular in outline, with remarkably broad, overlapping segments of great substance, quite representing the florist's ideal. Its parents are O. armainvillierense × crispum, the former being from O. Pescatorei × crispum, and thus the latter is twice represented in it, though the influence of O. Pescatorei is well shown in the shape of the lip, and in the broad, blunt sepals and petals. It

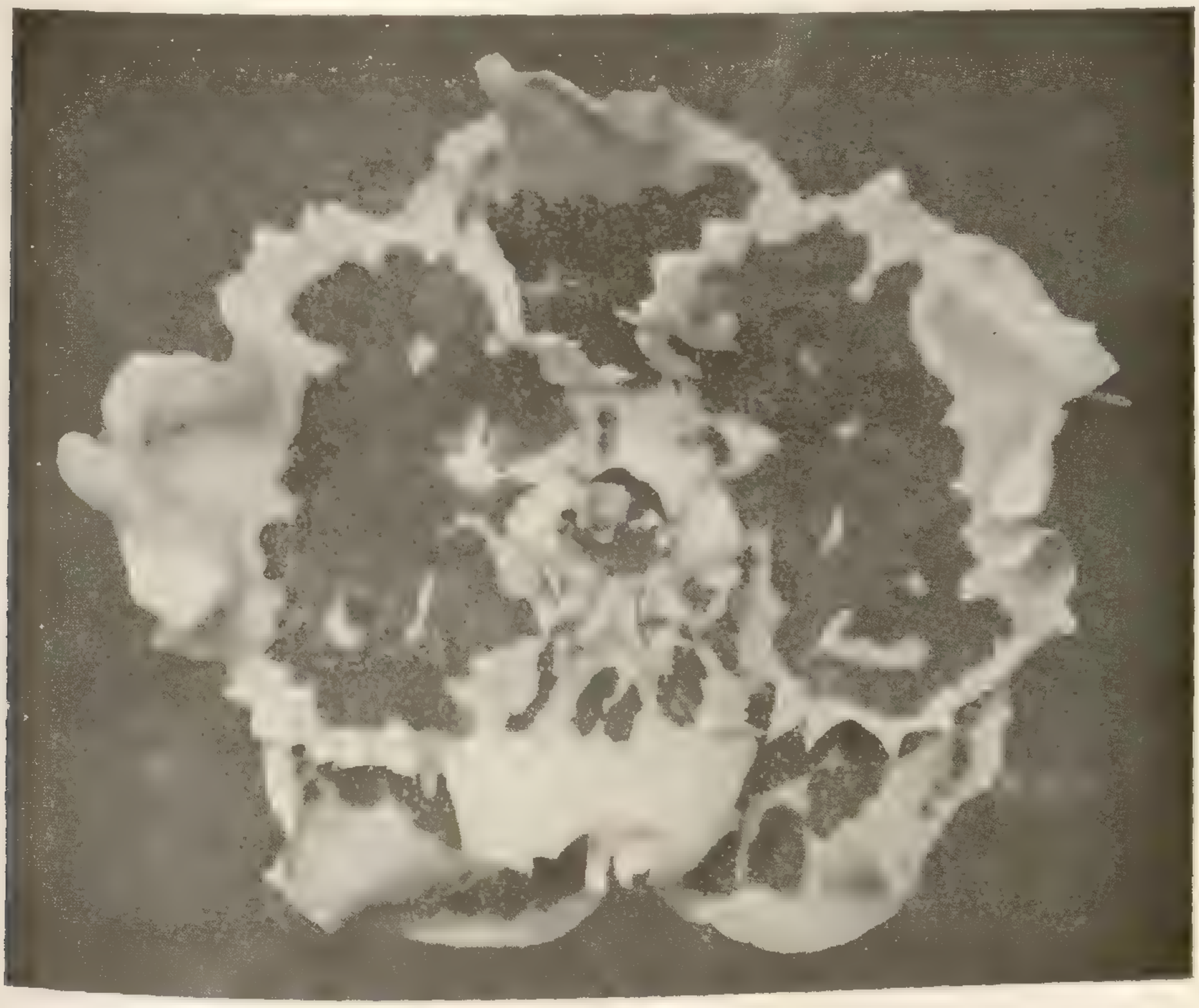

Fig. 26. ODONTOGLOSSUM EXIMIUM LA PAPILLON.

may, indeed, be a hybrid of more complex parentage, for O. crispum Franz Masereel, which is presumably concerned in the ancestry, is suspected to be of hybrid origin, O. luteopurpureum being in some way concerned in the parentage. Whatever the origin, it is a brilliant acquisition, and the broad zone of nearly confluent claret-purple blotches with a broad white margin, flushed with pale rose, makes an effective contrast, and the lip is very attractive, being subpandurate with a few small blotches in front of the yellow crest, and a few small markings behind. It may be added that O. crispum Franz Masereel is also a F.-c. C. variety, whose history and a figure have already been given (*O.R.*, vi. p. 113).

CALENDAR OF OPERATIONS FOR NOV.-DECEMBER.

By J. T. BARKER, Orchid Grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

NOVEMBER and December are often considered the worst months of the year for Orchid growers, owing to the shortness of the days and the comparative absence of light. The difficulty is specially felt in foggy districts, and the only thing that can be done to mitigate it is to keep the roof glass as clean as possible, and to maintain a proper balance in the amount of heat and moisture, with the admission of a little air whenever possible.

TEMPERATURES.—Winter conditions must now be strictly enforced, and the following temperatures should be aimed at, a slight fall being allowed in any division for a short period, when, through severe frost, much fire-heat is necessary to maintain the temperatures.

East Indian house, 60° to 70°.
Cattleya house, 55° to 60°,
Mexican and Intermediate houses, 50° to 60°.
Cool house, 45° to 55°.

For some considerable time the heating apparatus will have to afford all the heat necessary in the various houses, and this should be used with care, as an excess of fire-heat, if persisted in, brings in its train all kinds of insect pests, besides causing other injuries to the plants. The injurious effects of artifical heat, when the pipes have to be kept very hot during unusually cold weather, should be as far as possible counterbalanced by a slight admission of fresh air and a moderate amount of damping of the paths, stages, &c. A dry, fiery, and stuffy atmosphere should not be allowed at any time, as this condition is not conducive to healthy and satisfactory growth.

WATERING.—In all departments the plants at this season must be watered with extreme care, and it should be impressed upon those who are entrusted with the application of water, that the condition of the plant, whether at rest or in growth, must always have consideration. No plant should have water applied to it unless it really requires it, as unnecessary watering ruins the compost, as well as the roots growing in it.

VENTILATION.—Air should be admitted to the houses on all favourable occasions, not in such a way as to cause draughts, but so that the plants are enabled to breathe it without the dangers of receiving a chill. All plants grown in glass houses are subject to the conditions the cultivator provides for them, and this is a point that cannot receive too much attention. Fluctuations of temperature should be avoided as much as possible, otherwise much harm may accrue to the plants. Owing to our changeable

climate, it is difficult to maintain a regular temperature at all times, but the error is more often made of having too much artificial heat, than having too little.

Resting.—Those Orchids which are at rest, should be allowed to remain quiet as long as possible. They should not be allowed to shrivel for want of water, on the one hand, neither should their roots be decayed by an excess of it, on the other. There is as much skill in resting a plant properly as in making it build up healthy growth in its growing season.

Mexican Lælias.—The early-flowering varieties of these useful plants will now be opening their flowers; others are later, and by judiciously manipulating them, the blooming period may be considerably extended. L. autumnalis, and its chaste variety alba, with L. albida and L. furfuracea, will be the first to bloom, and may be placed at the coolest end of the house, as they do not require quite as much heat as L. anceps and its varieties. The coloured varieties of L. anceps will be amongst the next to open their flowers, followed closely by the lovely white forms, such as L. a. Schrœderiana, Sanderiana, Stella, and many others. The beautiful L. Gouldiana will be in bloom about the same time as the white form of L. anceps, and makes a strong contrast to them. As soon as the flowering period is over; give the plants a good rest, allowing only sufficient water to keep the pseudobulbs from shrivelling. When new roots begin to push, any necessary repotting should be undertaken, using a good rough open compost, potting firmly, and water with extreme care until the new roots freely enter the new material. A temperature of about 55° to 60° F. by night, with a comparatively dry atmosphere, is suitable during the winter months.

Cypripediums of the winter-flowering section are doubly valuable this year, as owing to the shortage of bulbous plants which are grown to produce flowers at the Xmas season, this family will be in great request, as it adapts itself to all kinds of decoration. Being plants which are easily grown, and at the present in endless variety, I think they deserve yet more extended cultivation. As winter bloomers, fog resisters, and plants of easy growth they have few rivals. They should not be allowed to become absolutely dry at at any season, and early in the new year, as the different varieties pass out of bloom, those that require it may be repotted.

Cattleya and Læliocattleyas.—During the dull, dark days of winter the delightful flowers of this large family are doubly appreciated, and now there are so many fine autumn and winter blooming hybrids, no great difficulty is found in maintaining a display of their beautiful flowers. The remarks previously made regarding their culture may still be followed during the present months, provided the new material is allowed to become dry between each application of water.

Sophrocattleyas.—These and other hybrids derived from intercrossing Sophronitis grandiflora with allied genera, should be treated like the small Cattleyas and Læliocattleyas. Being mostly plants of small growth, they should enjoy a position well up to the light at all seasons. Individual plants may require special treatment during this sunless part of the year, but close observation will soon teach the cultivator their requirements. Many of these plants having delicate constitutions, and every precaution should be taken that they receive no unnecessary check.

Cymbidiums.—Plants of C. Lowianum, and many beautiful hybrids of this useful genus, will have their flower spikes in various stages of development, and should receive every encouragement. A suitable position for them is at the warm end of the Cool house, or the cool end of the Intermediate house. They are easily grown, and when things once more become normal will be in great request. Pot-bound specimens always produce flowers more abundantly than those recently disturbed, therefore root-disturbance should not be performed unneccessarily. The hybrids will soon be making a fine show.

Lycastes.—L. Skinneri and its variety alba have now finished up their growths, and are sending up their flowers, so that they should receive less water at the roots. Whilst growing they require an abundance of water, but as their growths mature less will suffice, although on no account must they be allowed to shrivel for the want of moisture. They are best potted in the spring when new growth commences. Through the winter a Cool house temperature of about 55° will answer their requirements, but in such a temperature care must be taken that the plants do not get too much water at the roots. The hairy roots of this species, are liable to decay if at all over-watered during the winter months. L. lanipes, and other winter-blooming kinds which enjoy an Intermediate house temperature, must have water given them with great discretion during the winter months.

Calanthes.—The pseudobulbs of the early flowering Calanthes of the C. Veitchii section are pushing up their flower spikes, and may receive a moderate amount of water at the roots. When the Calanthes commence opening their flowers the atmosphere should be kept comparatively dry, as an excess of moisture in the atmosphere causes their flowers to damp and fall off. The later flowering varieties, as C. Regnieri and some of the hybrids, should have every encouragement to develop their flower spikes. As soon as the flowers are over they should be placed in their resting quarters, where they may receive all the light possible, but no water, and in a temperature which does not fall below 55° F.

Vanda cœrulea will by this have passed the flowering stage, and should be rested in a temperature of about 60° F., paying strict attention to the ventilation and the atmospheric condition of the house. Very little

water will be needed; only sufficient to keep the plants from shrivelling. Too much water at the roots, or in the atmosphere, especially in conjuntion with a low temperature at this season, may be the means of many plants getting the dreaded black spot in the leaves, which is not easily eradicated.

VANDA TRICOLOR.—Vandas of the tricolor and suavis group may at this season be repotted, if they have lost their lower leaves and become leggy. These plants resent being disturbed at the roots at any time, and the mistake is often made of placing them into too large pots, thereby encumbering them with more rooting material than they can push through. Live sphagnum moss pressed firmly among the roots makes a suitable compost, and sufficient broken crocks should be added to keep the whole porous. Ample drainage is necessary, and each stem should be made secure .and the moss sprinkled with water to keep it alive whenever it becomes dry. These plants thrive much better when placed upon the damp bottom, where the moisture ascends around them, than when placed upon an open-work stage. A warm Intermediate house temperature is to their liking at all seasons.

ANGRÆCUMS, Saccolabiums, and Rhynchostylis, are all evergreen plants which require the warmth of the East Indian house the whole year round, and a reasonable amount of atmospheric moisture should be retained at all seasons. They will now have completed their growths; the green tips of the roots having become sealed over; and only sufficient water is necessary whilst the plants are in this condition to keep them plump, and in a normal condition.

MILTONIA VEXILLARIA and its hybrids should now be growing rapidly and pushing their roots through the compost. During the winter months they require watering with extreme care, and the compost should be allowed to become dry between each application. In the spring they will then be well rooted, and take up water readily, and produce strong flower spikes. They should at this season occupy a light position in a house where a temperature of 53° F., is maintained at night, with a slight increase during the day. M. Roezlii and M. Phalænopsis, with M. Bleuana and other hybrids, require more heat than M. vexillaria, and should either be grown in a house where a higher temperature is maintained, or placed in the warmest part of the house.

DENDROBIUMS.—The deciduous Dendrobiums now at rest must have water afforded them whenever they become dry, as should the plants be allowed to shrivel, not only may the crop of flowers be lost, but the plants may become so exhausted that it may take considerable time to bring them back to good health. D. Phalænopsis and D. formosum, as they pass out of bloom, should be carefully rested in a temperature which does not fall below 60°, and receive sufficient water to maintain them in a plump condition. The atmosphere should be kept in a fairly dry state, which will assist in

thoroughly ripening the pseudobulbs. The cool growing members of the nigro-hirsute section, such as D. infundibulum and D. Jamesianum, which thrive best during the summer months in the Cool house, will at this season enjoy the warmer quarters of the Intermediate house, and being evergreen must not be allowed to suffer for want of water. Other evergreen Dendrobiums, which are now resting, should be carefully watched that they do not suffer for want of water at the roots. Rest is essential to plant life, especially if the best results are to be attained.

Odontoglossums.—Plants of O. Uroskinneri, O. bictoniense, O. grande, and other Mexican species, require a slightly higher temperature during the winter months than the Columbian species, therefore it is advisable to remove them to a position where they may enjoy the benefit of a few degrees more warmth. O. citrosmum, having now completed its pseudobulbs, will only require water at long intervals.

Oncidiums.—The late-flowering species of this large genus, will also benefit by being placed where they may receive a little more heat than that of the Cool house, in which they have been grown during the summer months. This enables the flowers to unfold easily, and the plants start stronger and more freely into growth in the spring, than when allowed to remain in their cool quarters.

Pleiones.—The delightful Indian Crocuses, P. maculata, P. lagenaria, and P. Wallichiana, as they pass out of bloom, may be repotted. They should be grown in a similar compost to the green-leaved Cypripediumss but succeed best grown in shallow pans, suspended in a damp position in the Cool Intermediate house.

Zygopetalum Mackayi, the best known species of the genus, is now sending up strong spikes of bloom, which on account of their colour are valuable at a season when flowers are scarce. These plants flower from a partially-made growth, so when their flowering period is over, any necessary repotting should be undertaken. Being a free-rooting, strong-growing species, plenty of pot room and a good depth of compost is required. A mixture of good turfy loam and rough fibrous peat, with sufficient crocks to keep the soil sweet and open, makes a suitable compost. The pots should be well drained, the compost made moderately firm, and the plants watered with extreme care until the roots have freely entered the new material.

Epidendrum vitellinum.—Both the spring and autumn flowering varieties of this desirable Orchid deserve to be grown in quantity, and when we return to normal conditions no doubt Orchid importers will try to satisfy our requirements again. The plants flower, and likewise make their growths, at different periods, therefore will require attention as regards repotting at different times. Whilst making growth the plants may be freely supplied with water, if well rooted, and after producing their flowers

may receive a partial rest. A clean porous compost answers their requirements, and the plants are best grown in shallow pans, not being able to push their roots through much material. The autumn-flowering variety, having just passed out of bloom, should for sometime to come be kept on the dry side.

GENERAL REMARKS.—Owing to the exceptional conditions of the past four years few collections in this country are up to their usual standard, but we may hope that the day is not far distant when we shall once again see them in full splendour. We shall then be able to follow our vocation without the many restrictions that at the present day beset us. Our profession is considered a peaceful one, yet we are always at war against those things which do harm, namely insect and fungoid pests, and I trust that in a very short time this may be once again the only warfare we are called upon to practise.

CYMBIDIELLA HUMBLOTII.

See Frontispiece.

THE frontispiece to the present volume represents a finely-grown plant of the rare Cymbidiella Humblottii, Rolfe, from the collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury. The specimen was exhibited at a meeting of the Manchester & North of England Orchid Society, held on June 6th last, and received a First-class Certificate, a Cultural Certificate being also awarded to the gardener, Mr. E. Rogers, in recognition of his success. Miss Wrigley writes that the plant was bought by her late father, Mr. O. O. Wrigley, some three years ago, and flowered the following year. It was then divided, and did not flower until this spring, though it had increased enormously in size. The figure represents the plant as exhibited, the photograph having been kindly sent by Miss Wrigley. The habit of the plant is distinct, and the arching foliage very graceful, while the flowers, which are borne in an ample panicle, are green and black, and strongly recall those of Cœlogyne pandurata. The species is a native of Madagascar, and was formerly referred to Cymbidium, but is now recognised as belonging to a distinct genus, whose history was given at pp. 58-59, and a figure of C. rhodochila, Rolfe, at p. 57. According to Warpur the species is epiphytic, growing upon the stem of a palm, Raphia madagascariensis. Owing to this character, the plant requires different treatment from the terrestrial Cymbidiums. It is to be hoped that the striking C. rhodochila will again be introduced, as with a better appreciation of its requirements it should be possible to cultivate it successfully. It is said to grow always in masses of Platycerium, on the branches of high trees near the rivers, and on higher slopes of the forest.

CALANTHE BRYAN.

THE deciduous Calanthes are now making a fine display in our collections, and among them the hybrid known as C. Bryan, which is here figured from a plant grown in the collection of Sir Jeremiah Colman, Bart. It is a hybrid that was raised in the collection of the late Mr. Norman C.

Fig. 28. Calanthe Bryan.

Cookson, the parents being C. vestita and C. Regnieri, and thus it may be regarded as a form of C. Darblayana, which was raised a few years earlier by M. Ch. Maron. It is an easily-grown plant, and very floriferous, as may be seen from the figure. The flowers are white with a dark purple eye. A group of plants are now making a fine display in the Kew collection, and

there are others of the rose-coloured Calanthe Veitchii, which is one of the finest Orchids yet raised for decorative purposes. As the leaves fade before the flowers appear, they require to be staged with ferns or other foliage plants in order to get the best possible effect. The original C. Darblayana has flowers of uniform soft rose pink.

SOCIETIES.

Royal Horticultural.

A SUCCESSFUL meeting was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on October 22nd, when plants from ten exhibitors put in an appearance, and the awards consisted of three medals, one First-class Certificate, and two Awards of Merit. The meeting a fortnight earlier was limited to British grown fruit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. H. White, R. A. Rolfe, F. J. Hanbury, Walter Cobb, W. J. Kaye, J. Charlesworth, S. W. Flory, F. K. Sander, T. Armstrong, Pantia Ralli, J. Wilson Potter, C. H. Curtis, and Sir Harry J. Veitch.

First-class Certificate.

Odontoglossum eximium La Papillon (armainvillierense × crispum).—A superb variety, with remarkably broad overlapping sepals and petals, forming a nearly complete circle, and the lip broad and of good shape. The flowers are very heavily blotched with claret, the blotches being almost confluent towards the base, with the white ground colour well developed at the apex of the petals and lip. Exhibited by Messrs. J. and A. McBean.

Awards of Merit.

Cattleya Thora var. Bryndir (Empress Frederick × Mrs. Pitt).—A beautiful variety, having well-shaped ruby-red sepals and petals, with an orange throat to the lip, and some buff veining on the disc. Exhibited by Dr. Miguel Lacroze.

Laeliocattleya Linda (C. Dowiana aurea × Lc. Arachne).—A large and beautiful hybrid, having salmon-rose sepals and petals, and the lip ruby-crimson in front, with much yellow veining in the throat and on the disc of the lip. Exhibited by Messrs. J. and A. McBean.

General Exhibits.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier). sent a few interesting flowers, including Læliocattleya Iriselva (C. Iris × Lc. Elva), purple with a darker lip, Brassocattleya Gatton Prince (Bcl. Mackayi × C. Schrœderæ), Lc. Gaskell-pumila (L. pumila × C. Gaskelliana), Lc. Geoffrey-anceps (Lc. Geoffrey × L. anceps), and others.

Mrs. Bischoffsheim, The Warren House, Stanmore (Orchid grower, Mr. W. H. Young), sent a plant of Brassocattleya Maronii alba, having white flowers with a light yellow disc.

Dr. Miguel Lacroze, Bryndir (Orchid grower, Miss Robertson), sent Odontoglossum amabile Bryndir, a finely-spotted form, and O. Meredithiæ (Rossii × venustulum), most like the former, and having blush-white flowers spotted with red-brown on the sepals.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed a plant of the yellow Odontoglossum grande Pittianum.

Pantia Ralli, Esq., Ashtead Park (Orchid grower Mr. W. H. White), showed Læliocattleya Maqueda Ashtead Park var., with four large and richly-coloured flowers, and a second inflorescence in bud.

Messrs. Charlesworth & Co., Haywards Heath, staged a choice group, to which a Silver-gilt Flora Medal was awarded. It contained many beautiful Odontoglossums, conspicuous among them being O. crispum xanthotes with three spikes, some richly blotched O. eximium, and O. Doreen (eximium × Empress of India), of excellent shape and brilliant colour, several beautiful Odontiodas, Miltonia Bleuana with two spikes, M. spectabilis Moreliana, Odontonia Langowoyi, a well bloomed Doritis pulcherrima, some brilliant Cattleya Fabia, C. Dionysius, Læliocattleya Athene, Smilax, Salonica, and others, with the beautiful Brassocattleya Sofrano var. Buttercup, in which the sepals and petals are yellow, and the lip rich ruby-red, with an orange-yellow throat.

Messrs. Stuart Low & Co., Jarvisbrook, also gained a Silver-gilt Flora Medal for a large and handsome group, containing some brilliant Cattleya labiata, C. l. alba, C. Vulcan, C. Iris var. Buttercup, C. Ingramiæ alba, C. Alcimeda alba, C. Snowflake, the brilliant Sophrocattleya Chamberlainii, and Sc. Doris, Oncidium incurvum, O. varicosum, Wentworthianum, Brassocattleya Leemaniæ, Pholidota imbricata, some well-grown Stenoglottis longifolia, with numerous Læliocattleyas, Odontoglossums, and other good things.

Messrs. J. & A. McBean, Cooksbridge, were awarded a Silver Banksian Medal for a small group, containing good examples of Cattleya Hardyana and Fabia, Odontioda Diana and Bradshawiæ, the clear yellow Cypripedium insigne Laura Kimball and C. Germaine Opoix, Læliocattleya Inez (C. Warscewiczii × L. anceps Schrœderæ), most like the latter, and having blush-white sepal and petals, and the front lobe of the lip purple, the handsome Odontoglossum Beatrice, and a few others.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a small group, including the charming Lælia pumila alba, Læliocattleya Pathan var. Domitian, a richly-coloured variety, Lc. Golden Wren, Brassocatlælia General French (Lc. George Woodhams × Bc. Thorntonii) with lilac

sepals and petals and a darker lip, Odontoglossum Conqueror, and Odontioda Hector (Oda. Coronation × Odm. crispum Raymond Crawshay), a large and handsomely-marked flower.

Messrs. Flory and Black, Slough, sent Odontoglossum waltonense var. Rex, a large and handsome form, Brassocattleya Massangeana, Cattleya Mrs. J. Ansaldo (Adula × Warscewiczii Frau Melanie Beyrodt), the richly-coloured Sophrocatlælia Hanningtonii, and a few others.

Messrs. Sanders, St. Albans, staged a small group, including Cattleya Lady Veitch var. Victory, a fine white with deep yellow disc, C. Triomphe de Bruges, with deep rosy mauve sepals and petals, and a crimson-purple lip, lined with yellow on the disc.

At the meeting held on November 5th there was again a good display, and the awards consisted of two First-class Certificates, one Award of Merit, and two Medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, R. Brooman White, C. J. Lucas, J. E. Shill, W. J. Kaye, J. Charlesworth, W. H. Hatcher, F. K. Sander, E. R. Ashton, R. A. Rolfe, Pantia Ralli, R. G. Thwaites, J. Wilson Potter, Sir Harry J. Veitch, F. J. Hanbury, and Stuart H. Low.

First-class Certificates.

Brassocatlælia Antoinette Gatton Park var. (C. Portia cœrulea × Bl. Helen).—A remarkable hybrid, having very broad purple sepals and petals, and the broad lip with a darker zone in front of the yellow disc. The influence of the Brassolælia is difficult to trace, for the segments are relatively broader than in the Cattleya parent, showing a reversion to C. Bowringiana in shape.

Odontoglossum Lady Veitch (Hylandianum × Armstrongiæ).—A large and handsome variety, having much of the O. crispum shape, and the broad segments white, with heavy claret blotching on the lower two-thirds, while the lip is white with a violet-purple blotch in front of the yellow crest.

Awards of Merit.

Cattleya Eleanore (Warscewiczii Frau Melanie Beyrodt × Hardyana).—A very beautiful thing, having pure white sepals and petals, and a rich crimson purple lip, with light yellow base and some similar veining on the disc. Exhibited by Mr. J. E. Shill, The Dell Gardens, Englefield Green.

General Exhibits.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr J. Collier), sent an interesting series of cut flowers, including Cattleya Portia cœrulea, C. Alcimeda cœrulea, Læliocattleya Parysatis violacea, Cœlogyne specio-Colmanii, and several others.

J. Ansaldo, Esq., Rosebank, Mumbles, sent Sophrocattleya Faboris Ansaldo's var. (C. Fabia × Sc. Doris), a charming form, tinged and flaked with rose on a light yellow ground, with flowers of Sc. Gwendoline (C. Octave-Doin × Sc. Wellesleyi), Sophrocatlælia Myra, Læliocattleya luminild (Lc. luminosa × C. Rothschildiana), Lc. Golden Wren, Brassocattleya Ilene and Nestor, Cattleya Williamsiæ alba, C. Prince John, and Vanda cœrulea.

Dr. Miguel Lacroze, Bryndir, Roehampton (Orchid-grower, Miss Robertson), sent Brassocattleya Griselda Bryndir var. (C. Rothschildiana × Bc. Leemaniæ), a well-shaped flower, with cream sepals and petals, and the lip light rose with a yellow disc.

Mr. J. E. Shill, The Dell Gardens, Englefield Green, showed Cypripedium Etna The Dell var. (Leeanum × Dreadnought), a large and striking variety.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a fine group, including many good Cattleyas, Odontoglossums and others, those specially noted being a well-grown Angræcum Ellisii, several seedling Cattleya Dowiana aurea, good forms of Cattleya Dionysius, Æneas, and Princess Royal, the remarkable Chondropetalum Fletcherianum, Brassocatlælia Lilian (C. Iris × Bcl. Cooksoniæ), Odontonia Langowoyi, Odontioda Joyce (Odm. Harryanum × Oda. Royal-Gem), cream-white with dark claret blotches, O. Gwendoline (Odm. eximium × Oda. Madeline), cream-white, with rosy lilac margin and many purple-red spots, and the lip rosy lilac with a large chestnut blotch, and numerous good Odontoglossums and Læliocattleyas.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Banksian Medal for a small group of choice things, including Brassocatlælia Violetta (C. Warscewiczii × Bl. Veitchii), a fine lilac flower, somewhat darker on the front of the lip, and the disc yellow, Odontonia McNabiana, Cattleya labiata Princess of Wales, white with a flush of lilac on the front lobe of the lip, Odontioda Henryi and Madeline, Odontoglossum promerens xanthotes, and other good things.

Messrs. Sanders, St. Albans, staged half-a-dozen plants of the beautiful Cattleya Fabia alba, each bearing a spike of four flowers.

At the meeting held on November 19th, several choice Orchids put in an appearance, five of which gained awards of various kinds, and there were two medal groups, the one staged by Messrs. Charlesworth being exceptionally fine in every respect.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, R. A. Rolfe, Arthur Dye, W. Bolton, R. Brooman White, C. H. Curtis, F. K. Sander, C. J. Lucas,

T. Armstrong, E. R. Ashton, F. J. Hanbury, W. J. Kaye, and J. Wilson Potter.

First-class Certificate.

Sophrocatlælia warnhamensis (Scl. insignis var. Olive × Lc. George Woodhams).—A brilliant hybrid, the flower being very large, with intense carmine-rose sepals and petals, and a ruby crimson lip, with some orange in the throat. Exhibited by C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan).

Awards of Merit.

Læliocattleya St. George var. illuminata (C. Fabia × Lc. St. Gothard).—A handsome hybrid, the flower being of good shape, the bright-rose sepals and petals flushed with orange, and the lip crimson with yellow lines at the base. Exhibited by Messrs. Charlesworth & Co.

Preliminary Commendations.

Odontioda Marjorie (Odm. Alexandræ × Oda. Joan).—A very promising hybrid, the broad sepals and petals closely blotched with claret-red on a white ground, and the lip broad with a large blotch in front of the yellow crest. Exhibited by Messrs. Charlesworth & Co.

Odontoglossum Momus (eximium × Alexandræ).—A handsome thing, the flower being large and of excellent shape, with large claret-purple blotches on a white ground, and the lip very broad and with more white in front. Exhibited by Messrs. Charlesworth & Co.

Cultural Commendation.

Cattleya Portia cœrulea (Bowringiana violacea × labiata cœrulea).—To Mr. J. Collier, gr. to Sir Jeremiah Colman, Bart., for a finely-grown plant, bearing an inflorescence of nine flowers of a pleasing blue-lilac tint.

General Exhibits.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent a good plant of Brassocatlælia Antoinette, with flowers very similar to the one previously shown, and Cattleya Drapsiana Golden Glory (Mrs. Pitt × Dowiana aurea Statteriana).

R. Windsor Rickards, Esq., Usk Priory, Monmouthshire, sent a flower of Sophrocatlælia Isabella (C. Fabia × Scl. Marathon), with salmon-yellow sepals and petals, and a ruby purple lip, with much yellow veining in the throat.

Mr. Albert Fisher, Winchmore Hill, sent Cypripedium Florence Fisher, cream white with lines of purple dots, and closely resembling a small C. Rolfei, but the parentage recorded as C. Graceæ × insigne Harefield Hall var.

Messrs. Charlesworth & Co., Haywards Heath, staged an extensive group of well-grown plants, to which a Silver-gilt Medal was awarded. It contained a fine series of Cattleyas, Læliocattleyas, Odontoglossums and

Odontiodas, with several rare species, such as the brilliant orange-red Habenaria Roebelenii, Cirrhopetalum Medusæ, with its long, filament-like sepals, Restrepia striata, the distinct Pleurothallis Birchenallii, Bulbophyllum cupreum, a well-bloomed Oncidium cheirophorum, and others. The centre consisted of a fine plant of Cattleya Portia, and round it were a dozen seedling C. Dowiana aurea, while elsewhere we noted plants of C. Miguelito, C. Mira (Rhoda × Dowiana aurea), fine examples of Epidendrum vitellinum autumnale, Trichopilia Gouldii, Odontonia Langowoyi, Læliocattleya Serbia and Britannia, Miltonia Venus, Brassocattleya Soprano (Bc. Leemaniæ × C. iridescens), Odontoglossum crispum xanthotes, O. c. Lorraine, a handsome seedling with numerous claret-red blotches, O. eximium xanthotes, and various fine blotched hybrids, Odontioda Cooksoniæ, O. Marjorie, O. Gwendoline (Odm. eximium × Oda. Madeline), a handsomely-spotted hybrid, Disa Italia (grandiflora × Blackii), a striking hybrid most resembling D. grandiflora, which is represented three times in it, but the colour of the lateral sepals rather more rosy, and other good things.

Messrs. Armstrong & Brown, Tunbridge Wells, were awarded a Silver Flora Medal for a choice group, including a fine specimen of Cymbidium Hanburyi with two racemes, Cattleya Venus and C. Saturn alba, a few good Brassocattleyas and Læliocattleyas, Cypripedium Maudiæ and C. Thalia gigantea, fine examples of Miltonia Bleuana, Odontioda Bradshawiæ and O. Cooksoniæ, the handsome Odontoglossum Conqueror, O. Aireworth Orchidhurst var. (Lambeauianum × crispum) of fine shape and with two large purple-red blotches on the petals, and several promising seedlings.

Manchester and North of England Orchid.

At the meeting held at the Coal Exchange, Manchester, on October 3rd, the members of Committee present were :—The Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, Dr. Craven Moore, J. Howes, A. Keeling, D. McLeod, J. McNab, E. Rogers, W. Shackleton, and H. Arthur (Secretary).

First-class Certificates.

Cattleya Adula Marshal Foch, from Dr. Craven Moore.

Cattleya Soulange West Point var. (Lc. Lustre × C. Dowiana aurea). from S. Gratrix, Esq.

Cattleya Venus var. Marshal Foch, from Messrs. Hassall & Co.

Awards of Merit.

Cattleya Gaskelliana alba Walton Grange var., C. Lord Rothschild var. Pearl, C. Peetersii alba, vars. Sunray and Gratrixiana, C. Alcimeda var. Madeline; Læliocattleya St. Gothard var. amœna; and Odontoglossum crispum Leon, from S. Gratrix, Esq.

Cattleya Adula Bridge Hall var., from Mrs. Bruce and Miss Wrigley.

Cattleya Adula var. exquisita, from Dr. Craven Moore.

Læliocattleya Mrs. Findlay (callistoglossa × Dominyana), from J. J. Bolton, Esq.

Sophrocatlælia Marmion (Sc. Doris × Lc. luminosa), from A. J. Keeling & Sons.

First-class Botanical Certificates.

Cœlogyne Veitchii and Brassia longissima, from Mrs. Bruce and Miss Wrigley.

Cultural Certificate.

To Mr. E. Rogers, for Vanda Sanderiana, a Silver Medal being also awarded.

A Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a fine group of Cattleyas, with a few good Odontoglossums, Odontiodas and Cypripediums.

A Large Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. E. Rogers), for a group containing a magnificent plant of Vanda Sanderiana (a C.C. and Silver Medal being awarded to the gardener), a batch of Odontoglossum grande, including var. aureum, Cirrhopetalum ornatissimum, the rare Habenaria Roebelenii, and a few other good things.

Interesting exhibits were sent by Dr. Craven Moore, Victoria Park Manchester (gr. Mr. T. Arran); J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law); Messrs. Hassall & Co., Southgate; Messrs. Keeling & Sons, Bradford; and Mr. D. McLeod, Chorlton-cum-Hardy: several of which are included in the above list of awards.

At the meeting held on October 17th, the members of Committee present were:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, J. Howes, A. Keeling, D. McLeod, E. Rogers, W. Shackleton, J. Thrower, and H. Arthur (Secretary).

First-class Certificates.

Cattleya Mrs. S. Gratrix (Mendelii alba × labiata Purity), C. Alex West Point var., and C. Astron var. Madonna, from S. Gratrix, Esq.

Læliocattleya Serbia var. Florence Agnew, from J. J. Bolton, Esq.

Awards of Merit.

Cattleya Enidson (Harrisoniana × Enid), C. Sybil var. Brilliant, C. Lord Rothschild var. lilacina, C. labiata alba Pride of Southgate, and Læliocattleya luminosa var. Golden Glory, from S. Gratrix, Esq.

Brassocattleya Windsor and Cirrhopetalum Rothschildianum, from Mrs. S. Gratrix.

Cypripedium delicatum (Actæus langleyense × aureum sulphureum), and Habenaria Roebelenii, from Mrs. Bruce and Miss Wrigley.

Odontoglossum amabile var. splendens and Læliocattleya St. Gothard, from J. J. Bolton, Esq.

Cypripedium Wm. Coupe (Earl Tankerville × Priam), from J. Hartley, Esq.

Cypripedium Damascus (Earl Tankerville × Dreadnought), from Messrs. Sanders.

First-class Award of Appreciation.

Odontoglossum crispum var. Shower of Gold, from Capt. W. Horridge.

Cultural Certicate.

To Mr. E. Rogers, for a batch of Odontoglossum grande and var. aureum.

First-class Botanical Certificate.

Cycnoches peruvianum, from Mrs. Bruce and Miss Wrigley.

A Silver-gilt Medal was awarded to Mrs. Bruce and Miss Wrigley, Bury, (gr. Mr. Rogers), for a fine group, including ten plants of Cypripedium Maudiæ, with examples of C. Boltonii, Venus, Shogun, Dreadnought, Spicerianum, Lord Ossulston, Lord Roberts, and Fairrieanum, Cattleya Regina and Portia, Vanda cœrulea, and Epidendrum vitellinum autumnale.

Messrs. Cypher & Sons, Cheltenham, were awarded a Silver Medal for a group, including Cypripedium Gaston Bultel, Sir Redvers Buller, Mrs. F. Wellesley, Arthurianum Sanderæ, Actæus superbum, Bourtonii, Leeanum Balliæ, Winifred Hollington, Wm. Lloyd, Rossetti, Tityus superbum, insigne Laura Kimball and Harefield Hall, with Odontoglossum Uro-skinneri and var. album, Zygopetalum Balliæ, Cattleya Bowringiana atrosanguinea, and others.

S. Gratrix, Esq., Whalley Range (gr. Mr. Howes), was also awarded a Silver-gilt Medal for a good group of Cattleyas and Læliocattleyas.

J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law), was awarded a Silver Medal for a group, including Læliocattleyas in variety, Odontoglossum heathfieldiense; a batch of Epidendrum vitellinum autumnale, and others.

Interesting exhibits were staged by Mrs. Gratrix, Whalley Range (g. Mr. J. Howes); Capt. W. Horridge, Bury (gr. Mr. A. Coningsby); John Hartley, Esq., Morley (gr. Mr. Coupe); Messrs. Sanders, St. Albans; and Messrs. Keeling & Sons, Bradford; a number of which appear in the above list of awards.

Habenaria Roebelenii, Rolfe. — This brilliant little Habenaria, mentioned on p. 247, is a native of Annam, and an ally of H. militaris, which flowered in Mr. S. W. Flory's Nursery, at Twickenham, about six years ago (*O.R.*, xxi. p. 39). The two species are very similar in character, but in the present one the flowers are orange-scarlet throughout, and the leaves uniformly olive green, instead of being variegated.

ANGRÆCUM ELLISII.

IT was interesting to see a fine plant of the striking Angræcum Ellisii in a group exhibited by Messrs. Charlesworth & Co. at the R.H.S. meeting held on November 5th. The annexed figure, which was taken many years ago, gives an excellent idea of the species, which is a native of Madagascar,

Fig. 28. ANGRÆCUM ELLISII.

and was discovered about the year 1854 by the Rev. W. Ellis, after whom it was named. It was found growing on the trunks of large trees on the outskirts of the forest, sometimes mingled with aroids, ferns and other plants. On his return journey he brought home three living plants, and when his collection was broken up one of them was acquired by Mr. John Day, and it was from this plant that the species was described by Reichenbach in 1872. It was re-imported by Messrs. Veitch in 1879-80, through

their collector, Curtis, who found it growing on the margin of lakes and swamps, in partially exposed places in North-east Madagascar. The leaves sometimes reach as much as ten inches long, and the flowers are borne in graceful racemes, and are pure white, with the much elongated spurs tinged with buff.

NOTES FROM KEW.—XI.-XII.

THE closing months of the year invariably bring a display of the autumn-blooming Cypripediums, of which a good collection is grown, and many are again in flower, including forms of C. insigne and hybrids having more or less of this species in their composition. The hybrids far out-number the species, and a long list could be compiled, but of the latter we may mention C. Lawrenceanum, virens, tonsum, and venustum, the latter a good plant with eleven flowers. There are also examples of C. villosum and C. villosum aureum, with numerous plants in bud that will brighten up the house with the advent of the new year.

The Cattleyas and allies are still brilliant, in fact the front stage of one house has been gay for months, as the large Cattleya house behind, in which the plants are grown, provides an almost constant succession. A list would take too much space, but there are derivatives of C. labiata, Bowringiana, Dowiana, Gaskelliana, and Warscewiczii, Lælia crispa, Perrinii, purpurata, Brassavola Digbyana, and others, in the most varied combinations, and the interest is always maintained. The very distinct C. Dormaniana is again in flower. Lælia Gouldiana and L. anceps are grown in quantity, and are beginning to bloom, the coloured varieties of L. anceps coming first, to be followed by the whites later on. L. albida must also be included, a plant now carrying several spikes.

The deciduous Calanthes are making a good show, and are arranged in groups, C. Veitchii and C. Wm. Murray being now very effective. C. Bryan has the same origin as the last-mentioned, but is different in colour. C. Harrisii is blush white. Near by are a few plants of the brilliant Epidendrum vitellinum, with Epicattleya Sibyl, having green sepals and petals and a dark purple lip, Cœlogyne Rossiana and the handsome C. Mooreana, a well-bloomed Maxillaria variabilis, and a few Oncidiums.

Several Cymbidiums are in bloom, these including C. Tracyanum, C. Mastersii album, and C. sinense, with C. Winnianum and several hybrids of C. insigne. Several others are in spike, and the display will be continued for a considerable time. C. Schlegelii (insigne × Wiganianum) is a charming thing, with large blush flowers, and copious crimson markings on the lip.

In the Cool house, Odontoglossum tripudians and constrictum are in bloom, with examples of Masdevallia corniculata, Schrœderiana, the snow white M. tovarensis, Pleurothallis scapha, inflata, and papillifera, the latter a recent introduction from Costa Rica. There is also a fine plant of Lycaste gigantea, which is throwing up as many as seventeen of its curious flowers.

Among the rarer things may be mentioned the pretty little Saccolabium bellinum, Bulbophyllum lilacinum, with dense spikes of lilac-coloured flowers, the allied B. lineatum, paler in colour and with brown lines on the sepals, and Angræcum gracilipes, the graceful species which is figured at page 129. The plant of Stauropsis gigantea is producing another spike, and there are also two plants of Schomburgkia splendida, each bearing a tall spike of dark purple flowers, with very undulate, dusky purple sepals and petals, and a brighter purple lip. This does not by any means exhaust the list at the present time, and the number of species and hybrids that have bloomed in the collection during the present year must again aggregate several hundreds. It is doubtful whether any other group provides such a succession of interesting and beautiful plants throughout the entire year.

Our aim in the preceding notes has been to give an idea of the richness and variety of the collection at the present time, with a few glimpses into its past history. A record of the latter would recount the history of Orchid cultivation for upwards of a century. R.A.R.

CYMBIDIUM KANRAN.

AN interesting Cymbidium was exhibited at the Royal Horticultural Society's meeting held on October 22nd last, by Messrs. J. & A. McBean, Cooksbridge, with the information that it came from Japan. On comparison it proves to be C. Kanran, a species described by Makino, in 1902 (*Tokyo Bot. Mag.*, xvi. p. 10), from materials cultivated in the Tokyo Botanic Garden which flowered in January, 1902. The author remarks: "An allied species of Cymbidium ensifolium, Sw., and C. xiphiifolium, Lindl. This Orchid is most familiar to the Japanese, being admired as the noblest and most valuable plant, from the fragrance of its flowers and noble appearance of its leaves. It is found freely growing in shady forests of the warmer parts of the south-west of this country, but it is commonly cultivated in pots. It flowers at the beginning of winter, hence the name *Kanran*, that is, Winter Orchid. There are various forms: forma purpurascens is one of them, having a purpurascent flower." The locality is given as Prov. Musashi. It is identical with the plant figured in a Japanese work, published in 1856, and called *Somoku Zusetsu* (xviii. t. 4). The species

differs from C. ensifolium in its shorter and narrower, gracefully recurved leaves, and in the more elongated and acuminate sepals and petals. The plant exhibited bore two spikes of five flowers each. The sepals and petals are light green, the former narrowly lanceolate, acuminate, 1½ in. long and the latter over 1 in. long, and with a few purple lines and dots at the base. The lip is oblong, three-lobed, nearly 1 in. long, the colour light yellowish green, with some dark purple marginal markings on the side lobes, and a longitudinal channel on the disc. The appearance of the species in cultivation is interesting, for hitherto we have only known it by the old figure and the more recent description. Three forms are figured in the work quoted, and in a recent republication by Makino they have been named as follows: t. 4, C. Kanran; t. 5, var. virescens, with a more acute front lobe to the lip; and t. 6, var. latifolia, with broader leaves. These are only known to us by the figures. We may add that there are several other interesting rarities figured in the work, of which dried specimens from some of our Japanese correspondents would bewelcome. R. A. Rolfe.

LÆLIOCATTLEYA ELEGANS.

A SOMEWHAT comprehensive history of Læliocattleya elegans has just appeared. Originally described, we are told, as a species of Cattleya, in 1848—regarded as a doubtful species in some gardens and placed under Lælia, and further complicated by the inclusion of another plant that was imported with it—its hybrid origin not suggested till 1877, and not authoritatively recorded until many years later, finally left until 1911 to have its origin proved experimentally. References are given, and we turned them up. The suspicion of its being a natural hybrid is due to a somewhat similar plant having been raised artificially, though not from parents growing in the same locality; while the authoritative record is briefly as follows: "Cattleya elegans, Morr. = Læliocattleya elegans." But the story was not so given originally, and it affords an illustration of what may happen when a brief summary of recorded facts is thus inverted into the negative. And how much is omitted! The history of such a plant might well be treated graphically, somewhat as follows:—

Graphic Histories.—1.

1848.—Cattleya elegans described and figured as a species by Morren, from a plant which flowered in the establishment of M. Ambrose Verschaffelt, Ghent, and which had been sent from Santa Catherina by Francois de Vos in the previous year.—*Ann. de Gand.*, iv. p. 93, t. 185.

1853.—On a plant flowering with Mrs. Lawrence, Ealing Park, Lindley remarked that it was "a Lælia, if the mere number of pollen masses shall

definitely separate the genera Cattleya and Lælia. The pollen masses, although eight, are not, however, of equal size in this species, but four are quite small, and lodged in very shallow sockets in front of the anther."—*Gard. Chron.*, 1853, p. 582.

1855.—The name changed to Lælia elegans by Reichenbach.—*Allg. Gartenz*, 1855, p. 242.

1862.—The genus Lælia reduced to Bletia by Reichenbach, hence the name again altered to Bletia elegans.—*Walp. Ann.*, vi. p. 427.

1877.—Its hybrid origin suggested, Reichenbach remarking: "It is much to be wished that Mr. Seden may soon raise magnificent hybrids by crossing Lælia purpurata and Cattleya guttata Leopoldii, the more so as within my knowledge the demand for Lælia elegans is far greater than can be supplied by English growers." The occasion was the flowering of Lælia Sedenii, raised from Cattleya superba × Lælia devoniensis, the latter parent being "very like L. elegans"; he would regard it as the same, but for the fact that at the natal place of L. elegans only L. purpurata and C. guttata Leopoldii were to be found.—*Gard. Chron.*, 1877, ii. p. 424.

1880.—Lælia elegans var. alba figured (it had appeared two years previously) from the collection of Sir Trevor Lawrence, Bart., Burford, when F. W. Burbidge remarked: "Although Lælia elegans is an imported plant, it is nevertheless now generally accepted that it is a natural hybrid between Cattleya guttata, probably the variety Leopoldii, and some Lælia."—*Garden*, xvii. p. 132, t. 218.

1887.—Lælia Schilleriana, Rchb. f., L. Stelzneriana, Rchb. f., L. gigantea, Warn., and L. Turneri, Warn., reduced to L. elegans, of which it was remarked that its extremely variable character had given rise to the hypothesis of its being a natural hybrid, Lælia purpurata and Cattleya intermedia being chiefly concerned in the parentage, with the more remote participation of C. guttata in some of the forms. Of these it was clearly suggested that some approached C. intermedia and others C. guttata var. Leopoldii.—*Veitch. Man. Orch.*, ii. pp. 66-69.

1889.—The plant called Læliocattleya elegans by Rolfe, who pointed out that two distinct hybrids had been confused under Lælia elegans, the original, with numerous varieties, "there was every reason to believe" came from C. guttata var. Leopoldii and L. purpurata, "while a few others were as clearly derived from C. intermedia and L. purpurata." These were enumerated under Læliocattleya Schilleriana, "for it seemed undesirable that hybrids of different parentage should be included under the same name, and Lælia Schilleriana, which appeared in 1855, seems to be the earliest name applied to this hybrid."—*Gard. Chron.*, 1889, ii. p. 79.

1892.—Differences again pointed out when Læliocattleya elegans var. blenheimensis was figured, and "doubts having been expressed on the

matter," Rolfe remarked that "the evidence was too strong to be set aside," and asked, "Will no one make a few experiments and thus clear the matter up?"—*Reichenbachia*, ser. 2, ii. p. 43.

1893.—A detailed list given of the synonyms and numerous varieties of Læliocattleya elegans and Lc. Schilleriana, with notes of their characters, and references to descriptions and figures. — Rolfe in *Orch. Rev.*, i. pp. 235-238.

1898.—Origin of Læliocattleya Schilleriana proved by Messrs. Charlesworth & Co., by the flowering of a seedling raised from Lælia purpurata × C. intermedia, and shortly afterwards by M. Ch. Maron from the same parents (the latter recorded as Lc. elegans, *Rev. Hort.*, 1898, p. 335).—*Orch. Rev.*, vi. pp. 168, 259.

1911.—Origin of Læliocattleya elegans proved experimentally by Mr. E. F. Clark, who flowered an identical seedling raised from Cattleya Leopoldii × Lælia purpurata.—*Orch. Rev.*, xix. p. 261 (where a concise history of the hybrid and its parents will be found).

There may, of course, be secondary hybrids among the numerous forms described, but the foregoing will show how completely the inferences derived from a study of the history and characters of the two plants have been vindicated. R.A.R.

ORCHID NOTES AND NEWS.

THE last meeting of the year of the Royal Horticultural Society will be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on December 3rd. The Orchid Committee meets at 11.45 a.m. The first two meetings in the new year are January 14th and 28th.

The corresponding meeting of the Manchester and North of England Orchid Society will be held at the Coal Exchange, Manchester, on December 19th. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m. The first meetings in the new year will be held on January 16th and 30th.

The *Journal of Botany* remarks:—"In the *Orchid Review* for July-August, Mr. Rolfe has a paper on 'The British Marsh Orchises,' in which the more recent literature concerning these puzzling plants is summed up. Mr. Rolfe regards Orchis maculata, O. latifolia and O. incarnata as 'thoroughly distinct, though their natural limits have been obscured by the camouflage of hybridity where they grow intermixed. To this we attribute the confusion into which the group has fallen. All the three possible combinations have been recognised in Britain.' The paper contains much that

is of special interest to British botanists, to whose attention we commend it." We thank our contemporary for the complimentary reference.

The *Gardeners' Chronicle* announces with regret the death, from pneumonia, of 2nd Lieut. Jack Hardy, the younger son of Mr. George Hardy, of Pickering Lodge, Timperley, for some years one of the leading Orchid growers of Lancashire, in whose collection the handsome natural hybrid Cattleya Hardyana appeared in 1883.

DENDROBIUM HANBURYI.—This is a distinct and striking hybrid raised in the collection of F. J. Hanbury, Esq., East Grinstead, from D. pulchellum (Dalhousieanum) × D. fimbriatum oculatum. The flowers most resemble those of the pollen parent, and are deep orange-yellow, with a broad, reddish maroon blotch on the disc of the lip. The margin of the lip is neatly fringed.

CŒLOGYNE GATTONENSIS.—Raised in the collection of Sir Jeremiah Colman, Bart., from C. speciosa × C. Sanderæ. It bears an erect spike of three or four flowers, of fairly intermediate character, the sepals and petals being ivory white, and the disc of the lip yellow, with a pair of curved keels, bearing numerous short dark brown hairs. The imbricating sheaths at the base of the inflorescence of C. Sanderæ are absent.

CATTLEYA FESTUS.—Raised in the collection of Sir Jeremiah Colman, Bart., Gatton Park, from Cattleya Dormaniana × C. Adula. It has much of the general character of the former, having a bright purple lip, with very ample side lobes, and a broad rounded front lobe, while the sepals and petals are rather broader than in the same parent, and blackish purple in colour.

ORCHIS INCARNATA, L.—We are indebted to Miss Gertrude Jekyll, V.M.H., for the following note from Mr. W. R. Dykes, Charterhouse, Godalming, which was written in reply to a query as to the Marsh Orchises of the district. "The flesh-coloured species with unspotted leaves (O. incarnata) grows only on the Lower Greensand bogs on Thursley Common, and near the head of Frencham Little Pond, in both cases with O. latifolia and O. maculata in close proximity. O. latifolia grows at Hurtmore Bottom, and with it specimens with unspotted leaves are fairly common, though no other species grows there. This seems to show that the plant with unspotted leaves is merely a form of O. latifolia and not a hybrid." The note came after the article at pp. 162-166 was printed, and it suggests that the name O. latifolia is used for the plant with spotted leaves, which we refer to O. Braunii. We regard the unspotted plant as the original O. latifolia. In any case the secondary hybrid between O. Braunii and O. incarnata might be looked for in the locality first mentioned.—R.A.R.

Orchids in Costa Rica.—Mr. C. H. Lankester, who again sends several interesting flowers from Costa Rica, makes some interesting remarks on the conditions under which some of them grow: "Orchids seem to prefer, at least in humid situations, those trees which are trending towards decay, though this, when ultimately attained, means in most cases their own extinction. Some on reaching the ground with a rotten limb establish themselves cheerfully as terrestrial; usually they do not find sufficient light below and perish miserably." Speaking of the Catasetum group he adds: "The group, anomalous in so many other ways, is so even in its preference for rotten wood. Cycnoches, especially, occurs so in a state of nature. Mormodes rarely appears on a live limb; Catasetum does so frequently, especially on the Pacific slope. This, of course, is only my experience, and refers to those species occuring in Costa Rica. Cycnoches, notably, often appears on sawn lumber after exposure to weather, when this has been used for gates or gateposts and not painted."

"The Barkerias make a brave show at this season, the only Orchids which are reminiscent of the Dendrobes—I will say D. Phalænopsis—very hardy and prolific. I remember seeing in a San José garden all the Rose bushes covered with little seedling Barkerias, the product of a few individual plants placed iu a natural position on growing plants."

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

G.W.P.—Many thanks. A further consignment has duly arrived, and we are now able to report as follows:—1, Oncidium carthaginense, Swartz; 5, Warscewiczella Wendlandii, Rchb. f.; 6, Phaius grandifolius, Lour.; 10, Cyrtopera Woodfordii, Lindl.; 12 Catasetum macrocarpum, Rich; 13, apparently a colour variety of the preceding. N. 14 and 20 may represent a new species, and we should be glad to know of the habitat, and to receive a dried leaf in a future sending. Others require further study.

C.S.—The original and correct name is Brassocattleya Mariæ, which dates from 1902.

T.W.—The flower sent may be a light-coloured variety of Cattleya labiata. C. Warneri generally blooms in June and July, on the new growths, while C. labiata flowers from the mature bulb after a short rest. Both are Brazilian, though from different districts.

C.H.L.—N. 42, Masdevallia Laucheana, Kränzl.; 43, M. picturata, Rchb. f., or a very near ally, with rather more slender flowers; 45, very near Oncidium cheirophorum, Rchb. f., but not quite identical. The Maxillaria is at present uncertain.

J.W.—Zygopetalum intermedium, Lodd. It often does duty in collections for Z. Mackayi, but has larger flowers than the original plant.

Beta.—Masdevallia corniculata, Rchb. f.

D.L.—Many thanks. The packet duly arrived, but we have not yet been able to settle the question.

G.L.—We regret the delay, which is due to the abnormal conditions. We have found it impossible to get the work done, but hope the difficulty will not continue much longer.

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